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# THE DENTAL REGISTER,

A MONTHLY JOURNAL OF DENTISTRY.

DEVOTED TO  
THE INTERESTS OF THE PROFESSION.

---

EDITED BY

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# THE DENTAL REGISTER.

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[No. 1.

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## COMMUNICATIONS.

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### **The Thirty-sixth Annual Meeting of the Michigan Dental Association.**

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SAULT STE. MARIE, MICH., AUGUST 18, 1891.

---

Reported by N. S. Hoff, D.D.S., Ann Arbor, Mich.

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The association meetings were held in the Court-room of the Court House. The first session was called to order at 10½ o'clock by President Dr. H. K. Lathrop.

Rev. P. T. Rowe was present and invoked the Divine blessing upon the meeting.

The Hon. Geo. M. Brown, mayor of the city was introduced and made an address of welcome, complimenting the members of the association and the profession generally. The citizens of Sault Ste. Marie were highly honored to have the association meet in their city, and as its representative, Mr. Brown desired most cordially to welcome the members individually and the association to all the privileges and hospitality of the city.

The President thanked Mr. Brown for his cordial welcome, and read his annual address.

#### PRESIDENT'S ADDRESS.

For the honor which has been your pleasure to confer upon me to be your presiding officer for this meeting, I return you my most sincere thanks. I am not insensible to the importance of the position to which you have called me, and I have grave fears of my ability to properly fill the position, for I have little or no education in parliamentary law. But in discharging the duties which are incumbent upon me, I shall endeavor to serve you to

the best of my knowledge and ability. I hope and trust, and indeed I am sure that I shall be fully sustained and aided in that labor by every member present.

We meet here to-day under the most favorable auspices, harmonious and prosperous, so let our meeting and relations ever remain to our mutual benefit. Dentistry scarcely a century old, has risen from its humble origin and become a highly respectable power for good throughout the world. At first it was confined to and practiced by a few ingenious and self-taught workmen who made their own instruments and materials and did the best they could under the circumstances and conditions of the times. Now by concerted action, by science and association, we have arrived at a highly commendable condition of attainment in the beauty and usefulness of our manipulations.

The success that has attended our efforts for improvement is a matter of which we may well be proud; for dentistry has kept pace with the movements of the age and now claims to be a profession the peer of any other.

In our efforts to raise our profession to its present exalted position, we have done nobly for ourselves and for humanity. Our object has been, and I hope will continue to be, to attain the greatest usefulness and perfection in an honored calling.

All societies and associations are composed of members enough it is hoped to accomplish the particular object for which they were organized. In the less thickly populated sections of the country such organizations are seldom found, and the want of companionship and society is sadly felt; but in large cities and thickly settled towns, such organizations are much more easily formed and maintained.

The members of any profession widely separated, find it very difficult to keep up with the march of their chosen calling, and to obtain that skill which will give them confidence in their ability for success and to meet on equal terms their more favored brothers. Such isolated practitioners of dentistry are apt to fall into methods and customs of their own, which are very liable to be full of imperfections. They are apt to recognize no code of ethics or practice and become a law unto themselves, and it re-

quires a great amount of courage on the part of any one to question their lack of attainments.

The dentist should be a man of skill, sound judgment, and above all, honest. Now to give these attainments to the members of our profession, the colleges, societies and associations, have done very much, but it seems to me that still other organizations could do still more; just how or in what way I have only a vague idea in my own mind. I was impressed by the remarks of Dr. W. H. Richards, of Knoxville, Tenn., before the Southern Dental Association. He favored a permanent place of meeting that could be called a home, have a library and museum, and he said the advantages to be gained by this course were, that the sessions could be extended to such time as would give ample opportunity to carry through in detail all clinics, lectures or mechanical procedures, and have lectures on dentistry, and so much of the collateral sciences as pertains thereto, thus year by year raising the standard of dentistry and offering a post-graduate course to all members of the association. Now, gentlemen, I know of no better place to put such a thing to a practical demonstration than right here in our great State of Michigan, and although I have had very little talk with any one on the subject, I doubt if we would have any obstacles put in our way, of using lecture rooms, laboratories, library and museum of the Dental Department of the University of Michigan.

Ann Arbor is a beautiful little city, and a more pleasant place could hardly be found to spend a few days during the summer, when the regular departments of the university were not in session. This may not impress you all as it has me, but I offer it only as a suggestion, but it seems to me a step in the right direction. I hope you will all think about it, and if any of you think you have a better idea, tell us about it and I am sure we shall be able to devise some scheme that will accomplish our purpose.

*Dr. J. Taft.*—In these days the greatest and best things are accomplished, not by individuals alone, while it is generally the case that some one mind is responsible for the first idea or conception, most great and important enterprises are the result of combinations of kindred minds. This will be no where better illus-

trated than in the wonderful progress of dental art and science; in fact this associated effort has resulted in the exaltation of dentistry from mere handicraft to a scientific profession. It will be profitable to recall the influences for good of this association in this State, to enforce the thought that associated effort is good. It was because this association asked the legislature of the State to protect its people from charlatans and tyros that we now have the excellent laws in this State, protecting the qualified practitioner as well as the innocent public.

This association also, by concerted action succeeded in having established in connection with the great State University a department where dental science should be taught. And it ought to be the desire of every member of this society to most heartily concur in the suggestion of the president in regard to the establishment of a permanent home for the association, where a library, museum and laboratories should be available for any sort of study, or investigation that would provide better practitioners, or give opportunities for advanced thinkers to carry out experiments, which it would be impracticable for individuals to provide for themselves. No better work it seems could engage the attention of this meeting than to put this matter in the way of accomplishment.

By vote of the association the president was instructed to appoint a committee to consider the practicability and advisability of establishing a permanent place of meeting for the association. This committee, appointed since the meeting, is complete, as follows: J. Taft, N. S. Hoff, W. A. Dorland, J. Ward House, Wm. Cleland.

The chairman of none of the regular committees being present, no reports were made.

The afternoon of the first day was devoted to clinics. Dr. W. A. Dorland, of Grand Rapids, exhibited a combination "Plate and Bridge" which he had just constructed for a patient. It consisted of a small gold plate swaged to cover only the alveolar ridge of the upper jaw, except the third molar tooth on each side, which was covered with a collar having parallel sides and a flat cap, the tooth having previously been dressed to allow a

nice adjustment. A collar clasp or band was made to fit around the first collar accurately and of sufficient width and strength to resist the movements of mastication. A cap with cusps was then soldered on top this band, making a crown, and this crown was then soldered to the gold plate. The idea being that the gold plate would have an advantage because of the limited amount of mucous membrane covered, and also because of its secure attachment by means of the accurate fitting crown to the cylindrical ferrule. This ferrule being previously cemented to the natural tooth—in this way a removable bridge is secured capable of being manipulated at will by the patient for cleanliness, etc., and a degree of stability secured which is impracticable with the ordinary plate, and the whole fixture presenting none of the objectionable features of permanently attached bridge-work. The regular “bridge dummies” with porcelain face and metallic caps were used as teeth and so soldered to the plate as to secure cleanliness and the largest mastication surface.

The doctor also exhibited a lower denture in process of construction involving the same ideas. The work was beautifully and artistically done and showed an amount of patience and skill that is highly commendable.

*Dr. E. R. Jackson*, of Grand Rapids, crowned a second upper bicuspid tooth with a gold Richmond crown, and attached a bicuspid dummy with a porcelain face and metallic cap to fill the space caused by the loss of the first bicuspid. This was a successful operation and readily accomplished in a very satisfactory manner, making a slightly, cleanly and useful substitute for the lost tooth. There were no special features in the doctor's methods except perhaps his method of stamping the caps for his crowns and dummies, which he obtains by stamping from solid buttons or pieces of thick gold by means of steel stamps and counter-dies of his own construction.

#### EVENING SESSION.

The meeting was called to order at 7:30 P. M. by President Lathrop and the minutes of the previous session read and approved.

*Dr. Isaac Douglas* read a paper entitled, Hints from the Office

and Laboratory. If we would command the respect due to our profession we must attend carefully to the most common-place details of our work. Whether a patient does or does not have a glimmering of the higher attainments of a dentist he quickly takes in the ordinary arrangements of the office and habits of the operator, and he has a right to require not only general neatness, but special cleanliness.

I have seen in dental offices sights which made me blush for the brotherhood.

A dentist's hands, in particular, should not only look clean, but should *be* clean and *smell* clean, and perfect cleanliness is not likely to be attained without suitable conveniences. The neatest and most handy method of washing the hands is from a running stream. It takes less water when that is an object; and is much quicker, which is always an advantage. It is wholly unobjectionable. Those who are not connected with water-works will be well repaid for arranging a tank, even if no larger than a common water pail.

It would not require a very fastidious patient to become utterly disgusted with a dentist who would put his hands into four successive mouths, and back again into the first mouth, without any attempt at cleansing except to wipe them on a filthy napkin on the head-rest of the chair. Nor would his disgust be less, were he to see the filthy water, and the filthier wash-bowl where he finally washed his hands and the much-used towel where he wiped them.

If any one thinks this picture overdrawn it is only because his observation has been very limited in this direction.

Even though supposed to be clean the dentist's hands should always be washed just before commencing to work for a patient, that the latter may know their condition from their coolness and moisture, and may experience a feeling of comfort.

Tact and suavity are needful accomplishments when working for adults, and indispensable for children. In case of emergency the operator should be quick to invent a way to bridge it over; and when practicable should conceal his dilemma from the patient, but not deceive.

A few days ago I was putting in the last one of a large number of fillings. The tooth was a left upper lateral incisor. The anterior proximate side had been filed away before coming to me. After removing what had been softened by decay, the cavity was extremely shallow, the dentine being opaque further toward the pulp. When the cavity was three-fourths filled I broke through to the pulp; this being the first case of the kind in over forty years' practice. I revealed my dismay by the expression, "Oh, pshaw." The secret once out, I explained to the patient who remarked that it did not hurt. Having removed the filling and putting a sharp drill into the engine, I went to the pulp from the highest portion of the cavity. As soon as the drill struck the pulp I put in some crystals of cocaine, rested five minutes, then resumed with the drill until an opening was made sufficient to introduce a barbed broach. Put in some more cocaine, rested ten minutes, then with the broach removed the pulp entire. The patient then remarked that she had not suffered much. I then washed out and filled the root canal, and filled the crown cavity. The patient seemed more delighted with the results than if the accident had not occurred, remarking that the operation was not as painful as the separation of teeth with the separator.

To keep dental cavities dry while filling, it is necessary to resort to a great many expedients, according to the situation and other circumstances. With many small cavities a piece of spunk or string, or a roll of paper, crowded under the free margin of the gums, will serve the purpose admirably; cut the gums loose a little way if necessary.

Below a labial cavity in a lower cuspid the gums and alveolar border had receded so that the cavity extended nearly one-eighth of an inch below the margin of the alveolar border upon the opposite side of the tooth. This is a very perplexing case to fill with gold. Take a piece of hard wood, shape it like a wood-carver's gouge, only let each corner project that it may pass in more or less between the teeth, fitting it to the position on the tooth. Before applying the dam saturate a thin piece of spunk with a 20 per cent. solution of cocaine and lay it on the gums for

five or ten minutes; do not have too much of the solution lest it mix with the saliva. Now apply the rubber dam; also the ligature; tie loosely for the present. Pull the rubber and ligature-knot downward in front of the tooth so as to expose the entire cavity and margin of the gums above the rubber. Place the stick in position and hold the rubber below the cavity firmly; let loose the rubber and with a thin instrument carefully work the rubber to its place. In this an assistant may be of great service by tightening the ligature gently while holding the stick firmly in place with the left hand. The cavity may now be prepared and filled entirely with the right hand.

There are many cavities where we can not put in a first-class gold filling, but can put in an excellent filling of amalgam; and without question this is much better than a poor gold one, for nothing will preserve a tooth better than the best amalgam filling.

Take a case of a left lower wisdom tooth with a large crown filling of amalgam, which has done service for eleven years, yet is still in perfect condition. A large cavity has formed in the posterior buccal side; three fourths of the posterior side and one-half of the buccal side are gone nearly to the margin of the gums, and when prepared, to the gum and below. Of course the gum is fretted and cut more or less by the excavators, and bleeding slightly. Wash out the cavity, dry it with paper or spunk, and fill with dry absorbent cotton, allowing the cotton to extend over the gums. Dip a pellet of cotton in alcohol and touch that in the tooth to saturate it. Twist quite hard a piece of rather coarse ligature-twine, double and twist hard again, wax well and pass through the flame of a lamp to melt in the wax. Remove the cotton from the tooth; there is now no hemorrhage. Pass the twine around the tooth. If the second molar is too close to admit so large a cord between the crowns, run a piece of floss silk between the strands at the doubled end of the twine, pass the doubled floss between the crowns, and, by it, draw the cord through between the necks of the teeth. Tie the twine around the tooth by a surgeon's knot on the lingual side. Do not draw it tightly at first as it will lie across the cavity, but carry this part backward and push it down between the neck of

the tooth and the gums. This excites slight hemorrhage which can be stopped as before. The pulp of this tooth was destroyed about one year ago, and the posterior cavity filled—or rather, stuffed by a tooth-carpenter. After removing the crown filling, and after properly preparing and filling the root canals, again fill the cavity with cotton and saturate with alcohol, as before, yet not pressing it on the gums very hard this time, lest the removal of the pressure cause the blood to flow where the gums may have been cut. Prepare the amalgam and press it pretty dry. Now, either fix a pad of bibulous paper, sponge, or fold the corner of a napkin to press against the parotid duct; twist the napkin and lay it between the tongue and jaw. Tip the head well to the right, remove the cotton, take up the excess of saliva, dry all with a warm air syringe, and the cavity is ready for the filling.

Take rather a large piece of amalgam at first, so as to cover the part next to the gum at once, pressing it down firmly. The more force used in packing the filling the better the prospect of its lasting for many years. After thoroughly condensing the filling dress it to shape, being careful that it does not project beyond the margin of the neck of the tooth.

Suppose a case of two approximate cavities in upper molars reaching far above the enamel of the tooth; the gums having receded. It is impossible to make the dam stay above the cavities, but by putting a string around each tooth, as described heretofore, the two strings nearly or quite fill the space between the two teeth above the cavities. After preparing and packing and again drying, as in the other case, fill as one cavity, letting the first piece of filling be large enough to cover the upper portion of both cavities at once. After they are well filled let the patient close the mouth and grind down on them well, provided the lateral walls are intact, so there is no danger of breaking down the filling. Then cut them apart and trim into that shape which will be the most durable and comfortable for the patient.

For gold fillings in those small cavities sometimes called pin-holes, first drill out the cavity round to remove the decay. Then with a small, round bur very slightly undercut on one or

two sides, just enough to insure the filling against turning while burnishing. With a bur a few sizes larger than the first bevel the edges of the walls slightly, and after washing and drying the cavity is ready to fill.

To prepare the filling, have a piece of bone, a tooth-brush handle will do, with holes graded to correspond with the engine bur. With a tapering square rimmer enlarge these holes from one side so that they will be tapering most of the way through. Make a cylinder larger than the cavity when rolled snugly between thumb and finger. Force this through a number of successive holes until it will just fit the round part of the cavity. When the cavity is clean and dry insert this prepared plug. If all is perfectly done one can hear it squeak as it is forced through the round part of the cavity. Drive it home with plugger and mallet, and there is the most perfect filling that can possibly be put in such a cavity. In this way I have filled such cavities no larger than No. 00 burr. I have put in six of this kind, besides two other fillings in the grinding surface of one molar.

This method also works well in case of quite large tin fillings in the posterior surface of bicuspid and molars when there was such a profuse flow of saliva that it was just impossible to keep the cavities dry long enough to fill them in the ordinary way. Of course the tooth back of the one filled must be missing to fill in this way.

In malleting sore teeth hold a piece of block tin, lead or hard wood against the opposite side.

To prevent the pain from the application of oxyphosphate near the pulp, touch with a thin solution of gutta percha in chloroform; over this lay a piece of No. 8 tin foil, or a flattened pellet of gold. Then put in the oxyphosphate.

Exposed pulps may be capped in a similar way by adding a small amount of oil of cloves to the gutta percha solution. If the pulp be wounded, stop the hemorrhage with chloroform and take away the clot so made before capping.

For pyorrhœa alveolaris, try a freshly prepared saturated solution of sulphate of copper. To apply, take a hard wood stick

the size of a match, cut one end down to the thickness of thick writing paper, roughen the edges, twist on a very little cotton, dip into the solution and pass into the pockets after pretty well removing the moisture with a napkin or bibulous paper. This works like magic.

To prevent dark work in rubber work, and to prevent breaking blocks, grind and match the blocks together accurately. Bevel the corners toward the ridge slightly. After the piece is flaked put in warm water until warmed through. Separate as soon as warm enough. Peel out the body of the wax; wash out the rest of the wax with boiling water from one foot above. With a thin instrument press a No. 50 cotton thread into the v-shaped groove letting the ends of the thread dip into the plaster on both sides, or at the ends. Cut a groove in the plaster next to the half of the flask that contains the model, to receive the surplus rubber. Make waste-gates every one-fourth inch all the way around, making them the shape and size of one half a No. 9 iron wire, or even larger. Be careful not to put in so much rubber that the excess will fill the trench. Have your flasks hot and give the rubber plenty of time to move; it will not move quickly under pressure except by too great force.

It is sometimes the case, particularly with a partial upper denture, that the plate will be as snug as desirable part of the time, but sometimes very loose. To avoid this, before casting your model, make the grooves in the impression caused by the rugæ of the mouth much larger, as in some mouths these vary in size at intervals.

To secure the blessings of your patients polish the gingival and palatal surfaces of all rubber plates.

#### REFLEX NERVOUS ACTION.

Mrs. P., aged 32, was taken with pain in back of head and neck. A physician pronounced it neuralgia, and treated her several months, the patient meantime growing worse. A third M.D. called it spinal affection, and doctored her the remainder of two years. She then became insane. Then the physician advised her husband to take her to an asylum, but they took care of her at home. After she had been insane two

weeks, she became rational one morning, and remarked, "I am going to Romeo to have my tooth pulled." This was the first complaint that had been made about the tooth. I was called to the house and extracted a right lower wisdom tooth with an abscess attached on the apex of the root as large as a green pea. This abscess had discharged through the tooth just enough to prevent its breaking elsewhere, but not enough to relieve the pressure; and the pain was reflected, first to the back of the neck and back of the head, and finally to the waist and elbows. The removal of the tooth ended the whole trouble, and twenty years after, the symptoms had not returned.

Mr. B., seated in the chair, preparatory to having a tooth extracted, said: "I have had pain in my right elbow for three months; some of the time it has been swollen and lame, so that I could not feed myself with my right hand. I have not had a bit of pain in my tooth till this morning. Now I want to know if there is a nerve running from my elbow to my tooth as a part of the time the pain is in my tooth and a part of the time in my elbow?"

Mrs. S., aged 29, after suffering with a tooth for several days, came nine miles to have it extracted. It was evident at a glance that she was suffering from chorea. After three or four minutes she became quiet, and her friend remarked, "she has been in this condition for three days; please extract her tooth as soon as you can, and I will tell you about it afterward." As I put the forceps to her mouth, the spasm came on again. As soon as it subsided, I extracted the tooth. An expression of relief came over her face at once. Her friend then remarked, that the tooth would ache three or four minutes; the moment the pain left the tooth, she would commence to whip her hands together, and keep it up till the pain returned to the tooth. As soon as the tooth commenced to ache, the hands became quiet. This had gone on for three days, and her hands had become so sore that when she struck them together she would cry out like a child.

Mrs. A., aged 49, came for consultation about her left eye. It had pained her for two or three weeks. Examination revealed the fact that the pupil was drawn out of normal form, the larger

diameter being double that of the lesser. Yet no inflammation was perceptible. Although she declared she had no trouble with the teeth, yet examination proved that the crown of the upper sixth-year molar was two-thirds wasted away, and the pulp very largely exposed. She would not be persuaded to have the tooth removed; and two weeks from that time, a darkness came over that eye, and she never recovered the use of it. Had the tooth been extracted in time, undoubtedly the eye would have been relieved.

#### DISCUSSION.

*Dr. J. Taft.*—There are many good points in Dr. Douglas paper that we might discuss with profit to all present. But the matter of personal cleanliness it seems to me, is one that ought to be of special interest to every dentist, for it is a question of the utmost importance and means oftentimes success or failure. Some people are naturally careless and uncleanly, and can't appreciate the nice distinction between being clean and orderly, or the reverse. Others again are unclean because they allow business to interfere with order and the necessary attention to decent toilet preparations. The man who is unclean because he knows no better or it is a part of his make up, may be excused perhaps more than one who allows the demands of business to so encroach upon the requirements of decency as to neglect to keep himself and his surroundings acceptable to his patients. If you have no time to keep your office clean, employ an assistant to look after this and perhaps relieve you of some other unnecessary labor, in order that time may be had in which to make yourself acceptable to your patients. A carefully trained office assistant is a necessity and a blessing as well as a luxury.

Personal health which makes one unacceptable or disagreeable, demands careful attention. Bad breath is especially disagreeable and can generally be avoided. When a disagreeable breath results from objectionable and filthy habits, it ought not to be tolerated for a moment by any self-respecting person.

The doctor related an instance of where a well-known dentist was called upon by a colored girl for some dental treatment, and

because of the careful toilet preparation he made before and during the treatment, he so impressed the girl that she related the fact in the wealthy home where she lived, and as a result a large and wealthy connection became the dentist's patrons.

An appeal to the mercenary inducement is not the only or highest motive to urge to induce dentists to become cleanly, but the reaction upon the man himself will be of incalculable value, lifting him to a higher plane of self respect and morality.

*Dr. Douglas* thought the dentist's cuspidore should receive more attention than it generally does. He recommended washing thoroughly and then smoking them over burnt paper. Light a ball of paper and hold over it the cuspidore until it is hot, and then set it down over the burning paper and leave over night.

*Dr. N. S. Hoff.*—The matter of personal cleanliness is one that merits careful consideration as it is of the greatest importance, but cleanliness of operating instruments and appliances is one that is equally important if it really does not transcend all other sanitary considerations. The invariable presence in every condition of the mouth requiring the interference of the dentist, of disease inoculating influence, which necessarily must contaminate every instrument used, renders cleanliness in respect to instruments and appliances of the utmost importance. Every dentist should provide himself with simple and sufficient means for safely sterilizing every instrument used in connection with operations upon the teeth and gums; and no instrument once used should be used on another patient, and generally not on another tooth in the same mouth without its having been cleansed and sterilized. This is particularly true in regard to excavators, burs, scalers, nerve canal instruments, and rubber-dam clamps, and applies with more or less force to other appliances.

There is a statement in the paper in regard to the efficacy of amalgam as a filling material that I cannot agree with, and I don't think it is the accepted belief of the profession. The Doctor says, "Nothing will preserve a tooth better than the best amalgam fillings." Amalgam as a filling material is notoriously faulty and unreliable. While it is true that occasionally an amalgam filling will have apparently preserved a tooth from the

further encroachment of caries, it does not always follow that any particular skill or care was employed by the operator in making it. In most of these cases good and sufficient reasons may be given for the favorable result. The most skillful and conscientious operators have given amalgam more than a fair test; they have earnestly desired to demonstrate it a reliable filling material, and used it long after it had proved itself to them, by its continued failures, unworthy of confidence. It is not just to pick out the isolated cases where amalgam has apparently proved itself a reliable material, and draw the conclusion that the best amalgam filling will save teeth as long as any other filling material. The statement is misleading and may be looked upon as an endorsement of the material. At the same time it is a reflection upon the manipulative attainments of some of the best men in the profession. Moreover we don't think it is true that the number of good amalgam fillings will average proportionately with the number of good gold fillings.

*Dr. Saunders.*—I have often heard that amalgam made as good fillings as gold, but I do not believe it. My experience does not demonstrate it. It is sometimes a difficult matter to determine that one filling is going to save a tooth and another will not; or that one filling is better than another when both are apparently accomplishing the object for which they were made. My reason for not believing in amalgam is not based on the fact that it always fails, but that it is more likely to fail on the average than gold. I do not think I fail in manipulating the material; I take all the necessary precautions I do with other materials; I work it dry and use all other necessary precautions. It seems to me that the fact that we are continually striving to learn to use this material in such a way that it may not prove a failure is good evidence that it is not as good a material as gold for filling teeth. I believe gold is the most reliable material for filling teeth. But it must be used skillfully, and judgment must be exercised in the selection of cases; that is, the nature of the tooth structure to be operated upon, extent of caries, difficulties of approach, etc. While I believe gold is the best filling material I most decidedly hold that amalgam has a place as well as

gold, cement, tin and gutta-percha. It should be our constant aim to use the material that judgment based upon science and experience has demonstrated to be the one adopted to the particular case in hand.

*Dr. Sweetnam.*—Much of the cause of failure in fillings is due to the fact that due care is not exercised in the preparation of cavities. Thin or weak walls should be cut away. Neither do I believe in making six fillings in the crown of a molar tooth, the fissures should be cut out and the cavities made into one. The paper suggests a treatment for capping and saving a pulp which has been bleeding; by coagulating the blood, removing the clot and then capping the nerve. I can't save pulps that have reached this degree of exposure and don't consider it practicable to undertake it. The paper also suggests manufacturing a cylinder and driving it into simple crown cavities. I don't think a filling made in this way would prove at all reliable, because it could not be made to conform to the cavity walls.

*Dr. Douglas.*—I think my experience ought to justify me in maintaining, or at least expressing the opinion, that amalgam when properly manipulated will preserve the teeth. I have practiced in one place thirty years, and have seen fillings recently that I put in many years ago, and I have only recently seen a filling made in the first years of my practice that was preserving the tooth perfectly. I think good amalgam skillfully manipulated will preserve the teeth as well as any other material.

*Dr. J. Taft.*—It is surprising to me that any one who has had such success in the use of amalgam, as Dr. Douglas, should ever use anything else. While it may be true that amalgam is a safe and reliable filling material in Dr. Douglas' hands, it has woefully fallen short of giving satisfactory results in the hands of most operators. One great difficulty with this material is that it encourages faulty and careless manipulation, there is nothing in its manipulation to call out the highest ability of the operator, and the very ease with which it is manipulated is a source of evil in more ways than one. The material itself has inherent, harmful and bad qualities which ought to debar it from use. Of its practical use, perhaps I ought not to say anything, for I have

never yet inserted an amalgam filling in any patient's tooth; but from what I have seen of those made by other operators I don't think I shall begin now.

*Dr. Douglas.*—I use amalgam successfully and I can't think that others fail for any other reason than that of faulty manipulation. I am just as particular to prepare the cavity for an amalgam as for a gold filling. I work the amalgam dry, press it in strong linen or buckskin—never use chamois skin, as the fibres of the chamois will imbed themselves in the material and prevent its perfect crystalization—when all the mercury has been squeezed out that is possible, it will still contain sufficient to make it pack readily. I always wash the material in alcohol.

*Dr. Hoff.*—I do not think the trouble is in the manipulation at all. I have used all of the best and most expensive amalgams made, and have adopted every suggestion that seemed to have any reason in it, and the sum total has been, in my hands, failure. I don't think the fault is in me altogether, but am compelled to conclude that a material demanding such nicety in manipulation, does not compensate adequately in the results secured.

The Secretary read a paper written by Dr. G. E. Corbin, entitled.

A STRANGE CONDITION. DID ARSENIC PRODUCE IT?

A few months since, a small woman with fairly good health presented herself for attention.

I found that the crowns of eight molars had been lost by decay to such an extent that I extracted their roots separately, and easily.

Two incisor and one canine tooth of the lower jaw, were crownless and pulpless. Three bicuspid and two incisor teeth of the upper jaw were also crownless and pulpless. These eight teeth I have since supplied with artificial crowns.

The crowns of the other two upper incisor teeth were pulpless, and nearly half destroyed by decay, but their contours have been restored with annealed gold under the mallet.

The crown of the fourth upper bicuspid was pulpless, and half destroyed by decay. It is now filled with oxyphosphate of zinc.

My astonishment over this pulpless condition was greatly increased when informed by the patient that she never had toothache in her life! Half the crown of the right inferior first bicuspid was restored with gold foil.

A large gold filling was inserted in right superior first molar. In preparing the last two teeth mentioned, excavations in the dentine could be felt, but produced no decided pain. Gold fillings were inserted in several other teeth where there was no sensation in the dentine whatever, but as the teeth were firmly set, of good color, and surrounded by healthful tissues, I did not open into their pulp chambers. Another excuse for not doing so, if apology seems to be necessary, that with all of these bad teeth, she has never had an alveolar abscess! My curiosity was so great as to induce me to institute a careful inquiry concerning the woman's history and habits. In October, 1880, her condition was such as to cause her to consult a physician, so called. "The Doctor" prescribed "Fowler's solution." This the patient took in "in six drop doses," three doses each day as directed, without any knowledge or suspicion of the *nature* of the solution.

Getting no better, "the doctor" was again consulted, and repeated his prescription. After weeks of perseverance in the use of the medicine, new and troublesome symptoms arose.

The number of the prescription being on the bottle, the medicine was procured of the druggist and taken with punctuality for months; the patient constantly growing worse, until, for the last six weeks of its use she was confined to her bed, in a darkened room, with inflammation of the conjunctivæ, suffusion of eyes, feet and ankles swollen, general anasarca in fact, and stomach too irritable to retain any solid food. In short, she was dangerously ill from slow arsenical poisoning, extending over a period of eight months; from October, 1880, to June 1881.

She reports that her teeth were all sound at that time—ten years ago.

As there is no effect without a cause, the question for consideration is to determine the cause of such extensive devitalization.

The fact that arsenic is made use of for the destruction of pulps, by virtue of its caustic effect when locally applied, will

throw no light on this case. For months the whole system was saturated with arsenic and the vital powers greatly depressed in consequence. The usual symptoms of slow arsenical poisoning were present. That the coats of the blood vessels were enfeebled, collapsed, was sufficiently proved by the general anasarca. The congestion of the capillary blood vessels and effusion into the cellular tissues about the eyes, in this as in other cases, was well marked and one of the earliest symptoms. A similar congestion in and effusion from the capillary vessels of the pulps of the teeth must have taken place. From the intolerance of food and general functional inaction the whole system suffered from deficient nutrition.

The privation of nutrition from the pulps may have been greater than from any other portion of the system. Both anatomical and mechanical causes can be assigned for this opinion.

The congested condition of the capillaries may have been such as to greatly restrict and finally entirely intercept the flow of nutriment through the small and unyielding apical foramina. The arsenical solution was taken for eight months, and the process of destruction of the pulps may have continued for many months, or even years, longer. Indeed, the diminished sensibility of the dentine in teeth recently filled, indicates that the process of devitalization is still at work.

This slowness of destruction has given time for the disposition of the products of decomposition through the process of absorption and elimination, as the result of increased glandular activity. Certainly this very strange condition had a cause. If the above history and suggestions throw no light upon it, will some one, better qualified, give us the true solution?

#### DISCUSSION.

*Dr. Douglas.*—As I listened to the description of the symptoms as described in the paper, I said to myself how true and perfectly are the symptoms of arsenical poison here described, corresponding exactly with the homoeopathic materia medica description of the manifestation of this drug. I have knowledge of a case in which the pulps of a child's teeth were destroyed by a similar use of this drug.

*Dr. J. Taft.*—The physician or dentist ought to take into consideration the susceptibility of the patient when about to administer drugs that are capable of producing by over dosage, harmful functional disturbances. And as these conditions are not always readily recognized it is a wise precautionary measure to begin the administration with the minimum dose and, inform the patient of the nature of the medicine used and the danger of prolonging its use, or over dosing. Had such precaution been taken in the case related by Dr. Corbin much suffering and injury would have been spared.

Serious mischief has often occurred from the use of arsenious acid applied topically. An unnecessarily large dose, or careless use of a proper quantity has resulted in serious injury. It is always good practice to be on the safe side when using poisonous drugs; therefore begin with small doses and increase as the system will tolerate and the circumstances indicate.

*Dr. Jos. Lathrop.*—Why was it, Dr. Taft, in this case related by Dr. Corbin, that the pulps were destroyed and other tissues were not devitalized?

*Dr. Taft.*—It is probably due to the fact that the inflammation set up in the system generally, affected the pulps, and these organs being inclosed in solid, unyielding walls, the capillaries become clogged and nutrition being cut off, death ensued from starvation.

[Dr. Corbin in the paper expresses surprise that no alveolar abscess from any of these teeth had taken place. This can easily be accounted for by the fact that these pulps died because of the inflammation consequent upon the administration of the arsenic systemically, consequently no micro-organism could be present to produce putrefaction, which would be the case if there had been an external opening from caries to the pulps. The absence of toothache can also be accounted for from the fact that the presence of the arsenic in the pulp tissue had narcotized the nerve endings to such a degree as to incapacitate them for conveying impression in the normal manner, and the death of the nerve cells and atrophy of the other tissues without any putrefactive change produced no inflammation in the contiguous

tissues, which were not destroyed by the general inflammatory conditions. It would be interesting to know whether the peridental membrane was at any time unduly sensitive.—HOFFJ.

*Dr. Douglas.*—I put some arsenical paste in the tooth of a boy thirteen years old and told him to come back to me in twenty-four hours. It was ten days before I again saw him, and I extracted the tooth at once, because the blood corpuscles had become disorganized and broken up, and passed into the tubuli of the dentine staining the whole tooth to a bright pink color. The utmost caution should be observed in making applications of arsenic to children's teeth, and in no case should it be permitted to remain there a long time.

The subject was passed and the meeting adjourned to meet Wednesday morning at 9:30 A. M.

#### WEDNESDAY.

Meeting called to order at 10 o'clock A. M. by President Lathrop. Minutes read and approved.

*Dr. N. S. Hoff,* read a paper entitled, "Systematic Medication."

The caption of this paper implies that, in our mind at least, there is such a thing as unsystematic or careless medication. The evidence may be had by noting the methods of our neighbors, journal articles, cases which fall into our hands from other practitioners, or a visit to the dental offices of the profession, and an inspection of their medicine chests, noting the medicines generally found and their condition. In some cases quite a collection of bottles containing various remedies; usually a large percentage will be compounds made after some published formula that the author used successfully, but we find this bottle unused—indicated by the dust which covers it—because the formula was not made to cure every thing from tooth ache to necrosis, and is therefore set aside for the more reliable creosote or carbolic acid bottles which have a prominent place on the front shelf and are evidently much patronized.

In the majority of offices the armamentarium will be found to consist of carbolic acid, creosote, tincture of iodine, tincture of aconite, arsenious acid, aqua ammonia, alcohol, tannic acid, etc. This is not such a bad equipment and possibly it may be all the

owner's intelligence requires, but it is not much in advance of the dental outfit of forty years ago. It is not the meagreness or faulty selection of remedies that we complain of so much as their empirical use. For an intelligent use of the list given above will equip an average practitioner to cope with the requirements of his business.

It ought to be a matter of concern to us all that in this day of progress and enlightenment, because of the universal dissemination of knowledge through the dental periodical literature and accessible dental societies, text books, etc., that more progress has not been made in the scientific application of medicines to the cure of dental diseases. It would seem that all the newer remedies, especially the approved ones, should be in the hands of the profession, not only that the patient may have the benefit of their use, but that by a wider use, sufficient and accurate data might be quickly secured as to the action of these remedies in the treatment of diseases of the dental tissues.

It is the careless use (we trust it may not be due to ignorance) of dental remedies that convinces us that our medication is, as it is frequently practiced, empirical and unsystematic, and consequently oftentimes tedious, and inefficient if not harmful.

There seems to exist the same lack of uniformity as to methods of procedure in the treatment of diseases of the dental organs, as in the methods of operating for their preservation by filling. And it is highly probable that the reasons in one case are the same as those which obtain in the other. The methods of filling teeth have not been evolved from the brain of the scientist or from his laboratory; but they have come with years of practice and experience from the men who have by their indomitable energy and perseverance amidst business perplexities, conceived the ideas, frequently worthless if not injurious, generally crude; and which it was necessary always to submit to the tedious and expensive—to both patient and dentist—practical tests of unscientific experimentation and development.

To-day our conceptions are scrutinized by scientific dentists, for our profession is now blessed with such men, and we are saved the long and tedious experimentation involved in the practical

tests of former years. While this is particularly true in regard to the more practical affairs, it is also true that our scientific dentists are at work upon causes and conditions of disease. Physiological and pathological dental tissues, and the action of reagents upon such structures, are better understood now than ever before, and the fact that no scientific classification of dental drugs and diseases is known to or used by the mass of the profession, is undoubtedly due to the fact that the profession has not kept pace with the advance of its own and other kindred sciences.

To illustrate the point we wish to make, we will take the liberty of referring to the drugs most commonly used by dentists. The old-time creosote and latterly carbolic acid, have retained their hold upon the dental profession thus long, not because of any particular virtue either one possesses, but because of their combination of properties. Carbolic acid is a stimulant, coagulant, escharotic, germicide, and antiseptic. It may be compared to a shot gun load, as it meets so many requirements, some one or more of which are generally present in every case requiring medication; but like the shot gun load it does not go singly and directly to the mark as a rifle ball does, but may scatter and destroy or mutilate other structures that it is exceedingly desirable to preserve. This agent undoubtedly has been a great boon to the profession and many cures have resulted from its use, but too often at great cost to other structures has this desirable result been obtained.

So long as we were working as it were in a very dim light in regard to the nature of disease, this agent was a great boon, but now that we know definitely what inflammation is, what causes it, and exactly how it takes place, and what the progressive stages are, and can also foresee results, it does seem that we ought to begin to apply remedies directly and definitely. It has been satisfactorily demonstrated to us that we cannot have supuration without the presence of a micro-organism; and we have also been shown that certain agents are hostile to the micro-organism and some are capable of completely destroying them; and consequently with our limited but distorted vision we see no necessity for the application of any remedial agent other than a

germicide—under some circumstances the worst possible agent that could be employed. This practice is no less wrong and unsystematic than to apply the one agent as a cure all in every case. Such a proceeding is about as systematic and scientific as it would be to insert an artificial denture in a mouth full of diseased, loosened and tartar covered teeth, and expect a healthy and satisfactory healthy process to take place, simply because we have used a material upon which to construct the denture, that experience has taught us is likely to subdue inflammatory conditions of the mucous membrane, and which we hope, because of careful adoption and skillful construction, will bring about the desired healthy condition. Just as certainly as some preliminary work is demanded in this illustrative case, so certainly is there generally a necessity for preliminary work to that of medication. In the treatment of diseases of pulps, alveolar abscess, pyorrhœa alveolaris, etc., some things are needed to be done before any medication will be beneficial. The pulp must be freed from all foreign and encumbering substances, the abscess must be so opened as to secure free and certain drainage, the salivary calculus must be removed and the teeth ligatured together if loose; many other simple and mechanical details must be attended to before any medication can be successfully applied. Douches or injections of warm sterilized water should follow the surgical means, in order that all fragments loosened by the instruments, as well as the blood and pus contained in the tissues which might be coagulated by some of the medical detergents, should be removed, as such a coagulum would remain as an irritant and hinderance to the direct and free application of subsequent medical agents to the diseased structures.

The next agent to be applied is a disinfectant. A combination deodorizer and germicide can usually be applied, as most germicides are more or less deodorizers. The parts are then ready for an antiseptic dressing and a period of rest. An antiseptic should be selected that will not become decomposed or dissipated too quickly, but by its slow decomposition and liberation of its sterilizing agent, will remain for some time in contact with the infected tissues, preventing the development and growth of micro-

organisms, and giving time for the enfeebled tissues to take on a more healthy function. If the tissues show no disposition to heal under this mechanical and antiseptic treatment, supposing it to have been thoroughly and carefully done, the indications then would be for the application of curative agents locally, stimulants or counter-irritants, systemically, tonics, alteratives, etc. Just at this point there is an excellent opportunity for the dentist to display his judgment if he is happy enough to have any that is based on medical science. Not that it may be necessary to supplant the physician, but to advise with him and ask his counsel and help in correcting systemic disorders, which very frequently are of sufficient force to thwart all well directed efforts for the successful treatment of local disturbances, although the active cause may be local in its nature.

Frequently it becomes necessary to destroy or remove a portion of the tissues which have become so enfeebled, that they will not take on again the normal function. For this, surgical treatment is generally preferable, but frequently it is not practicable, and we are forced to resort to the escharotics, painful and difficult to control though they may be. This treatment must be followed by the same treatment indicated above; detergents, disinfectants and antiseptics, accompanied by astringents or stimulants when indicated. A successful issue may be confidently predicted on the basis of science and clinical procedure if the details of the above outline are carefully considered. The point that we want to emphasize is, that agents of a single and definite action, when applied systematically may be expected to accomplish better results, quicker and with less destruction of valuable tissues, than those possessing numerous virtues, some of which it is not desirable to exhibit in peculiar conditions, because of the possibility of producing more harmful than beneficial results.

To illustrate, if possible more vividly, the systematic application of one class of approved remedies in the treatment of diseased dental structures, I would like to make the following tabular classification for use in the treatment of dental and oral diseases where suppuration is present. I would give preference to the first named agent in each class.

|              |  |
|--------------|--|
| DETERGENTS,  | { 1. Manipulative measures. } Both usually.  |
|              | { 2. Warm sterilized water. }  |
| DEODORIZERS, | { 1. Permanganate of potassium.  |
|              | { 2. Peroxide of hydrogen.   |
|              | { 3. Lysterine.  |
| GERMICIDES,  | { 1. Bichloride of mercury.  |
|              | { 2. Peroxide of hydrogen.   |
|              | { 3. Carbolic acid.  |
| ANTISEPTICS, | { 1. Aristol.  |
|              | { 2. Black's 1, 2, 3 remedy.   |
|              | { 3. Boracic acid.   |
| STIMULANTS,  | { 1. Alcohol and its tinctures.  |
|              | { 2. Aromatic sulphuric acid.  |
|              | { 3. Oil of cloves and sulphate of copper when it is desirable to have an astringent effect. |
| ESCHAROTICS, | { 1. Carbolic acid.  |
|              | { 2. Mineral acids.  |
|              | { 3. Arsenious acid and potassium hydrate.   |

## DISCUSSION.

*Dr. J. Taft.*—Sterilized warm water is a most excellent detergent, but it is in many cases insufficient. I have used the warm water to which a small quantity of soap had been added. If some alkali, such as the bicarbonate of soda, was added to the water the solvent property of the water would be increased without danger of introducing any harmful agent. I use pepsin with satisfaction in the treatment of exposed pulps that are encumbered with much disorganized tooth structure or other debris; it has a very good and satisfactory action.

*Dr. C. S. Case.*—I don't think warm water as a detergent can be compared with peroxide of hydrogen, which by its evanescence throws out mechanically much foreign material and thereby cleanses the cavity, while the elements liberated by its decomposition, break down and render soluble the insoluble materials contained in alveolar cysts, etc.

*Dr. Hoff.*—The peroxide of hydrogen that is placed upon the market is not free from acid, and its use in the treatment of teeth having foul pulps or alveolar abscesses through the pulp canals is not desirable, because of its solvent effect upon the hard tissues of the root. Then again, it is capable of coagulating pus in a

closed pocket, where it will remain for some time as an irritant before it can be dissolved and washed away. Consequently the use of peroxide of hydrogen should always be preceded by sterilized warm water to free the cavity from coagulable material.

Adjourned to meet at 2 P. M.

The association was called to order at 2 P. M., and Prof. C. S. Case, in lieu of a paper, gave a lecture on Correcting Irregularities of the Teeth.

When the majority of dentists undertake to regulate a set of teeth they immediately devise and construct a plate with springs and other attachments which are inconvenient for the patient to wear and which I think are entirely unnecessary. With a plate there is no definiteness as to the extent of the movement secured and its action is usually continuous, allowing no time for rest and recuperation. The plate is also more or less uncleanly. I use the "coffin plates" for spreading the arch, but never for moving teeth. I prefer an appliance with which exact and definite movements may be secured and periods of rest may be secured. I also want to know what amount of pressure or force I am exerting. Exactness of movement can not be obtained by the use of rubber bands, springs and ligatures. These springs and bands, because of their continuous force, are capable of doing great harm. The changes which the tissues are compelled to undergo in the process of regulating teeth, are not sufficiently understood. More attention should be given to this matter; our text books do not give it the consideration it deserves, and it should be taught more thoroughly in the colleges.

The "Angle" system of regulating, by means of screws, so arranged as to produce the desired movements with certainty and exactness, by manipulating at intervals the screws, is the most definite and scientific method of changing the position of teeth known.

The doctor here described the methods of constructing the different kinds of jack-screws, etc., for use with this system, exhibiting a great many models with appliances in place, showing how the different forms of irregularities could be satisfactorily corrected by this method. The appliances are all made of Ger-

man silver, except the nuts for the screws which are cut from five cent nickel coin. For bands No. 16 German silver wire is rolled down nearly as thin as it is practicable to roll it on an ordinary mill; considerably thinner than No. 36 plate gauge. Its toughness and high fusing power admirably adapt it for easily fitting and soldering, and even though very thin it will have sufficient strength to resist the force of any traction to which it may be subjected. The bars upon which the thread is cut are made of German silver wire, the size varying with the ideas and convenience of the manufacturer. The doctor uses No. 18 wire and draws it down somewhat in order to temper or stiffen it, so that it is large enough to cut the thread with No. 6 hole of the Martin twin hole screw-plate. From this hole in the screw-plate a thread is cut on a piece of softened steel wire to make a tap for cutting the thread in the nut. The point of this tap is then dressed to a triangular point and tempered. Holes of the proper size are drilled into the nickel coin and the tap run through them, cutting the thread. The coin is then sawed into little square blocks making a nut which can afterwards be filed to any desired size or shape so as to fit the wrench used in manipulating them. Considerable care is required to make all these things accurately, so that when the appliance is made and placed in position its movement will be positive and easy. The tubing into which the bars fit is made by cutting strips of German silver plate, No. 28 plate gauge, about one-fourth inch wide, and after turning up the edges by stamping into it a round excavator handle to expedite its passing, it is drawn through a wire draw plate, successively through the largest holes first, down to the one of proper size, when it will be found that a nice piece of tubing into which the jack-screw will exactly fit has been obtained. This can then be cut into such lengths as the case may require. These jack-screws can be made to pull or push, and one screw can be made by adding attachments to its tube, or the nut, or the screw itself, to exert force in four or five different directions, while the screw is only turned one way. The versatility of the system can not be fully appreciated unless one sees the application to models in which almost

every variety of irregularity has been corrected. The appliance may be gold plated after it is made if desired, but this is not necessary as the German silver does not corrode, although it tarnishes in the mouth.

*Dr. Parker*, of Grand Rapids, suggested that when tempering the steel taps yellow, prussiate of potassium mixed with flour and water so as to make a paste, would be an excellent mixture into which the steel tap should be plunged before it is heated. It prevents the steel from scaling and thus destroying the edges of the delicate screw threads.

*Dr. H. H. Jackson*, of Detroit, exhibited a number of articulated plaster models showing the manner in which cases of irregularity had been treated by means of springs made of piano wire and attached to the teeth by means of wire cribs, dispensing with all plates. He also gave a clinic illustrating the method of making the cribs and springs. The method is the same as that advocated by *Dr. V. H. Jackson*, of New York city, and referred to in the report of the proceedings of the thirty-first annual meeting of the American Dental Association on pages 541 and 542 of the Dental Register for November, 1891.

*Dr. Hoff* exhibited a model with a plate, which was used by *Dr. Bodecker*, of New York city, to draw back the upper incisors, which were very much protruded, and at the same time expand the arch which was contracted to a v shape. A rubber plate is made to cover the vault of the jaw, into this a flat gold band is vulcanized, passing out between the second bicuspid and first molar, and thence upon the labial faces of the teeth around to the corresponding place on the opposite side of the arch where it passes between the teeth, and is vulcanized into the rubber plate. The rubber plate is sawed on both sides of the palatal ridge three-fourths of the distance, beginning between the lateral incisor and cuspid, toward the posterior edge of the plate, on a line midway between the median ridge of the hard palate and alveolar process. A Talbott wire spring is then bent to conform to the plate and the ends inserted into the splint plate opposite the cuspid teeth, while the coil of the spring lies in the median line and near the posterior edge of the plate. The spreading of

spring causes the plate to expand and this carries outward the cuspid and bicuspid teeth causing the widening of the arch, at the same time the spreading of the arch puts a tension on the gold band which draws the incisors backward. Dr. Bodecker claims this is a very effective apparatus for the purpose.

EVENING SESSION.

At the evening session Dr. Hoff exhibited a number of new appliances and instruments secured through the kindness of the manufacturers and dealers. Including Dr. Timme's method of making glass inlays, a new base plate material, a new form of crystal gold, flexo separating slips, fissure burs, electric root dryers, electric gutta-percha filling packer, composition cement and asbestos filling material, sand paper strips, disk mandrels, etc., etc. He also exhibited a case of specimens illustrating a method of making a compound filling of cement and gold. The larger part of the cavity is filled with cement and while it is yet soft a little cake made of gold foil, approximating in form and size the cavity, is forced into it and the cement quickly set by injecting warm air into it. This little cake of foil retains a good receiving surface for gold foil with which the operation can be completed in the ordinary way. The idea comes from Germany and is interesting more because of the earnest endeavor of its author to do something for his profession, than that it will ever be extensively adopted. But it is possible this idea, in some modification, may at times be a very acceptable method for overcoming a perplexing operation.

There being no further papers to be read it was voted to elect officers and adjourn this evening.

The officers elected were: President, H. C. Corns, Detroit; First Vice-President, G. E. Sanders, Saginaw; Second Vice-President, N. S. Hoff, Ann Arbor; Secretary, J. Ward House, Grand Rapids; Treasurer, G. H. Mosher, Jackson.

Executive Committee: L. F. Owen, Grand Rapids; E. C. Moore, Detroit; Wm. Cleland, Detroit.

Local Committee of Arrangements: G. E. Saunders, Saginaw. R. P. Alden, Saginaw.

Supervisor of Clinics: W. A. Dorland, Grand Rapids.

Board of Censors: J. W. House, Grand Rapids; J. L. Gish, Jackson; J. L. Sweetnam, Manistee.

University Visiting Committee: J. B. McGregor, Port Huron; J. Lathrop, Detroit; J. A. Harris, Pontiac; G. L. Field, Detroit; H. H. Jackson, Detroit.

Legislative Committee: A. T. Metcalf, Kalamazoo; W. H. Dorrance, Ann Arbor.

The treasurer reported a balance on hand of \$187.09 after paying all bills. The association voted twenty-five dollars to the American Dental Association to assist in carrying on the work of examining the prehistoric crania of the country,

It was voted to hold the next meeting at Saginaw, June 7th, 1892. A vote of thanks was extended to Drs. Conway and Williams for the eminently satisfactory way in which they had provided for the comfort and convenience of the members during the meeting.

Adjourned.

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### Over Work.

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BY DR. HENRY COWIE.

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Read before the Detroit Dental Society, December 14th 1891.

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In making selection of this topic as a subject for a short paper to be read before this association at this meeting I shall endeavor to show the way it may affect us personally as dentists, and then some of the effects of over work to be noted on the teeth, particularly on those of young girls. In considering the first part of our subject, one quite as important at least to us individually as any thing pertaining to dentistry, for it is we who have to do the work, and live by that work, and if we fail to be able to accomplish our selected mission in life through any reason such as may come from over work, it is time for us to consider if we are doing justice either to ourselves, to those depending on us, or to our patients.

I think I am justified in the belief that those of us in full practice are in great danger of so doing; the big dollar

has a great attraction, an almost moving eloquence, and the most of us strive for its possession; we, perhaps not more than men in other pursuits, but it is a failure with most of us, and to attain money we all sin against the laws of health which should guide us.

One may work hard in such a way as to be called "wear" which is a natural and the legitimate result of lawful use, or we may work in such a manner, however, that it may well be called "tear" which is quite another matter, namely an abuse of our powers by over taxing our bodies and minds beyond our strength. Too long a strain will cause weakness. We can so work as to conserve our strength and thus be enabled to work a longer number of years and to do better work all the time.

Our business is one that taxes both body and mind, and combined over work of mind and body is doubly mischievous, for though a proper alternation of physical and mental labor is best fitted to insure a life-time of exertion, yet some forms of work, notably our own, bring this form of fatigue. A man who lives and works out of doors can do safely what we, who live an in-door, sedentary life, can not; he can work using his muscles, when fatigue comes he can, and generally does, warned by this feeling, take rest.

But we may not feel the effect of our muscular exertion and go on when our nervous power or force is utterly exhausted, because, unless I am mistaken, he who is using his brain sympathy, or nervous force, does not feel any particular sensation which warns him to stop taxing himself in this direction, and rest.

One is apt to get into a sort of exalted state under the influence of need, or the interest one may have in his work, and find out only in the way of headache, insomnia, eye strain, or some other of the serious forms of trouble arising from this source, that he has been doing too much—over-taxing his powers. The warning does not come always until the brain, after long suffering begins to say I have done enough.

We are apt to think our sense of being tired comes only from physical causes, arises from our constrained position, etc., when

we really are quite as much, if not more tired mentally than physically. We should, therefore, try to limit our work to a certain definite number of hours so that we may take time outside of our offices for exercise and rest.

Exercise we need, but in a different form from that given by our work, and rest we must have for the over-taxed nerves, unless we are willing to accept the certain results of over work. The indications of brain tire differ. One of the usual forms is to be found when, on retiring for the night, the mind keeps turning over and over the work of the day, very often in a very disconnected way, or else the imagination soars away with the energy of a demon conjuring up processions of broken and disconnected thoughts so that sleep is utterly banished, this state of mind being fatal to sleep. Another form makes itself manifest in headaches more or less severe. These plain symptoms of distress, if unheeded, may, and very often do, result in total failure of both mind and body. But, gentlemen, each of us will decide only by personal experience, we generally try to prove every thing for ourselves before we acknowledge it; we wait until we have been round the world before we confess the world is round; we will not even too rashly accept the fact that one hundred and forty-four square inches make a square foot; in fact, we do not accept the experience of others to profit by it.

In the second part of this paper, namely, the effect of Over-Work to be noted on the Teeth, the present method of education for girls is, in my mind, responsible to a great degree for the bad condition of the teeth as we find them in too many young girls; such a condition as we may easily recall from among our young patients who are attending, or have just left school.

Teeth well-formed as to shape and position, but each tooth decayed in so many places, with soft, large, white cavities of decay, that the task of saving them permanently seems, and is, almost hopeless. These girls having been over worked by the system of study now in vogue; this over-study, over-taxing the brain and nerve power, just at an age when they are undergoing organic development, which is of itself quite enough strain, renders them very sensitive to any additional tax on their

powers. In most of our schools the hours are too long, the studies are too many and particularly is this the case in our high schools. The family doctor knows how often and how earnestly he is called on to remonstrate against this evil; he is, of course, aware that many strong, sturdy girls stand the strain, but he knows just as well that many do not, that they break down and have weak eyes, headaches, neuralgia, etc., as a result of the over study.

A boy does not study as hard, that is, he will not go, as most girls do, home to study, but plays out of doors, and if he does study out of school at all he will do a little during the evening. Then, too, boys do not get the hardest part of their education until they are over eighteen, as a boy can not graduate in most of our colleges until he is twenty-one. A girl gets through, as a rule, about eighteen, so that the hardest part of her study comes just during the time when she should not be so over-taxed.

We, of course, are principally interested in the condition of their teeth, but we also know that if the general health is bad, and the development is checked, that the condition will be of the worst, so far as the condition of the teeth is concerned.

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DOCTORS AND POLITICS.—It is not generally known, says the *San Francisco Chronicle*, that Marat, the revolutionist dispatched by Charlotte Corday, was a physician, and that he had a certain success in treating consumption. It is recorded of him that he cured a titled lady of this disease in its advanced stages, and that her gratitude to him knew no bounds. Unfortunately he was enticed into politics and prevented from pursuing his studies further in a direction that might have made his memory revered instead of detested.

For some reason doctors seem to drift naturally toward politics and radicalism, perhaps because their profession tends to render them skeptical. In Brazil and the Argentine Republic they have shown themselves decidedly ambitious. The celebrated Dr. Charcot is a radical whose principles verge on the revolutionary. Clemenceau gave up his medical practice years ago to devote himself to politics, and though he is a man of great talent and a brilliant orator, his political efforts have not contributed to his personal advancement or been of great benefit to his country. Besides Clemenceau there are from forty to fifty physicians in the French Chamber of Deputies.

## PROCEEDINGS.

### **Minutes of 25th Annual Meeting of the Ohio State Dental Society, at Hotel Chittendon, Columbus, Ohio, Wednesday, December 1st., 1891.**

President E. G. Betty called the society to order at 10:30 A. M.

Minutes of last session read and approved, and roll of members called.

Chairman of the Executive Committee made an oral report of the arrangements perfected for this meeting. Report adopted.

None of the Membership Committee being present at this hour the president appointed Drs. Harroun, Butler and Lupton to act in that capacity.

Dr. Emminger stated, that in his opinion, the time had arrived when this body should cease doing missionary work, and therefore he moved that all other than members in good standing and invited guests should be excluded from the clinics and other privileges of this society.

Motion seconded by Dr. Harroun.

Dr. Sillito offered an amendment, seconded by Dr. Butler, to have the matter referred to the Board of Directors. Amendment carried.

Dr. Butler moved the time for sessions be from 9 A. M. to 11:30 A. M., 2 P. M. to 5 P. M., except Wednesday afternoon—the whole of which should be devoted to clinics. Carried.

President Betty then read his address after which some miscellaneous matters were disposed of.

Two members of the Publication and Voluntary Essay Committee, being as yet absent, the president appointed Drs. J. Taft and O. M. Heise to complete the same.

There being no further business at this hour—adjourned until 2 P. M.

Tuesday afternoon session called to order by President Betty at 2:30.

Minutes of previous session read and approved.

A recess was granted members for the payment of dues.

Minutes of the proceedings of the Board of Directors read.

The following persons were recommended for membership by the Board of Directors and, duly elected :

H. C. Brown, D.D.S., Gallipolis; Edwin Waddell, D.D.S., Greenfield; Horace A. Hubbard, D.D.S., Dayton; M. H. Evans, D.D.S., Franklin.

Dr. C. M. Wright, of Cincinnati, read a paper "Soliloquy of a Plastidule," the chief feature of which was a biological treatise on man.

There being two other papers on the programme which were expected to bear on many of the points contained in the paper, discussion on the latter was deferred until Tuesday morning, at which time the aforesaid papers would be presented.

Dr. Raffensperger, of Marion, then read a paper on The Care of the Teeth During Pregnancy and Lactation.

This paper was discussed by Drs. H. A. Smith, J. Taft, A. O. Rawls, C. M. Wright, C. R. Butler and C. H. Harroun.

Dr. W. S. Elliott, of N. Y., read a paper on "Erosion of the Teeth," the subject being afterward discussed by Dr. H. A. Smith and others.

Dr. G. W. Melotte, of Ithica N. Y., was accorded the privilege of the floor and proceeded to explain the so-called new method set forth in a circular sent out to the profession by Dr. F. M. Harris.

Briefly stated—it is a process of adding gold to gold without solder or high heat. The gold is rendered plastic by the addition of mercury, squeezing out the excess of mercury, as in the preparation of amalgam fillings. A portion of the plastic mass is placed upon the gold and the mercury evaporated by slow heat.

Dr. F. Y. Clark, of Saratoga Springs, N. Y., had used the method for banding gold plates fifty years ago, and it is known as the Old Fire Gilding Process.

Dr. W. S. Elliott also gave the society some useful and practical hints about constructing tooth crowns.

Adjourned to 9:30 Wednesday.

WEDNESDAY DEC. 2, 9:30 A. M.

Session call to order at 9:30 A. M. by President Betty.

Minutes of previous session read and approved.

Roll ordered called, and a recess granted for the payment of dues.

Dr. J. Taft moved that the roll of membership be revised. Carried.

The president appointed the secretary and treasurer a committee for that purpose.

The following applicants for membership having been recommended by the Board of Directors they were balloted for and elected: H. M. Kirk, D.D.S., J. H. Price, D.D.S., A. B. Fletcher, D.D.S., C. L. Smith, D.D.S., Columbus; J. H. Boger, D.D.S., Findlay; H. F. Harvey, D.D.S., W. T. Jackman, D.D.S., Cleveland; C. P. Gray, D.D.S., Madisonville.

A paper was read by Dr. S. D. Stewart, of Akron, on "The Philosophy of Nutrition with Legal Aspects."

Dr. A. O. Rawls, of Kentucky, followed with a paper on "Heredity."

These papers, including Dr. C. M. Wright's, were discussed by Dr. Harroun and others.

Dr. Melotte, of N. Y., presented the subject of Crown and Bridge Work, or Gold Restorations, in a graphic manner with illustrations and diagrams upon the blackboard.

Adjourned.

WEDNESDAY 8:30 P. M.

Society called to order by 2d Vice-President Geo. H. Wilson.

Reading of the minutes was dispensed with, and the following were elected to membership upon the recommendation of the Board of Directors:

D. Haight, Coshocton; H. E. Dunn, D.D.S., Warren; J. S. McCampbell, D.D.S., Xenia; B. F. Johnson, Camden; A. J. Bosant, D.D.S., Springfield; A. Jones, D.D.S., Lima; J. H. Weibel, D.D.S., J. F. Daugherty, D.D.S., Canton; J. C. Oldham, D.D.S., Springfield; L. P. Holbrook, D.D.S., Mt. Vernon; L. W. Ballard, Alliance.

Dr. H. H. Harrison of W. Va., read a paper on "Relationship."

Dr. J. Taft moved that a voluntary paper from Dr. W. H. Sedgwick be read at the banquet this evening. Carried.

A paper read by Dr. H. A. Smith on "Antiseptics for Sterilizing Dental Caries" brought forth an animated discussion.

Drs. Callahan, Arnold, H. T. Smith, H. A. Smith, Gray, J. Taft, Wright and Rawls taking part therein.

Adjourned.

THURSDAY DEC. 3RD 10:30 A. M.

Session called to order by President Betty.

Minutes of the previous session read and approved and the programme continued.

Dr. J. G. Junkerman, of Cincinnati, read an interesting paper on "What Causes Variety and Modification in the Character of Dental Caries."

Remarks followed by Drs. Wilson, Wright and H. A. Smith, being limited in the main to the endorsement of the essayists views.

Dr. Callahan, of Cincinnati, read a paper on "Combination Fillings." He (the essayist) taking the ground that in our State and local societies the matter presented should be largely of a practical character. That there was a tendency to neglect this valuable field and introduce the extremely scientific instead.

Drs. Wright and H. A. Smith followed with remarks, the former citing the evolution of the griddle makers as an argument against the exclusively practical proposition, Dr. Smith presenting teeth containing combination fillings.

Dr. J. Taft read a paper on "Dental Hygiene" which was discussed by Drs. Dennis, Whitslar and Taft.

On motion the society proceeded to elect officers for the ensuing year with the following results:

President, C. R. Callahan, Cincinnati; 1st. Vice-President, Geo. H. Wilson, Painesville; 2nd Vice-President, Chas. Welch, Wilmington; Secretary, Otto Arnold, Columbus; Assistant Secretary, Henry Barnes, Cleveland; Treasurer, C. I. Keeley, Hamilton.

BOARD OF DIRECTORS FOR THREE YEARS.

C. H. Harroun, C. C. Miles, J. A. Lupton, W. H. Hague.

## TWO YEARS.

W. D. Tremper, W. H. Whitslar.

## BOARD OF DENTAL EXAMINERS.

C. R. Butler, E. G. Betty.

The president-elect was conducted to the chair and introduced to the society by Dr. C. M. Wright.

Dr. Butler, of Cleveland, then read a paper on "Septicemia," which was followed by the reading of Dr. Sedgwick's paper on "Dental Legislation," by the secretary. The latter paper was discussed by Drs. J. Taft, Harroun and Arnold.

The work being completed the society adjourned to meet in Columbus, the first Tuesday in December, 1892, to continue in session four days.

Altogether considered this was perhaps the most successful and profitable meeting, to those in attendance, in the history of this society. The attendance was large, the programme was varied, the interest was continuous. A general sentiment of good will and satisfaction seemed to characterize the whole assembly from beginning to end, and when the guests departed it was with the hearty assurance that they would come again next year.

OTTO ARNOLD, Secretary.

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## CORRESPONDENCE.

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### The Electro Deposit Plates.

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DEAR EDITOR:—

Please allow me a little space to reply to a report on Dental Art and Invention of the Illinois State Dental Society, in regard to the above plates. The complaint is made that they discolor, and that one gentleman writes, "that it is very embarrassing to put into the mouth a *gold* plate and have it return in a few weeks looking like pot-metal." These plates are not gold plates. They are not and never have been sold as gold plates, but as *silver* plates, covered with gold, and the dentist should always state

this fact to his patients. They are liable to tarnish and the patient should be so informed, and that it is necessary to keep them well cleansed.

Mr. Joseph G. Ward, the patentee of this process, wears a full upper and lower plate, and I saw them a few days ago, and after three years wear they are as bright and beautiful as when first made. Mr. Ward cleans them once a day with a soft brush and hand sapolio.

Then, too, many of the dentists never return their plates for the final finish of gold. Out of the 1,400 plates made, fully one-third have never been returned for the finishing coat. As only enough gold is put on the first time to vulcanize over, and the silver surface is more or less exposed in finishing up, it is not surprising they tarnish.

Some plates are returned to be recoated because they are discolored. Some of these plates look as if they had never made the acquaintance of a brush. Is it a wonder then, they tarnish? I have seen rubber plates badly discolored from the same cause. I have seen pure gold fillings, in some mouths, black; a little cleaning restores them. So give the deposit plate a fair show.

I have used, in my own practice, some sixty of these plates, and they give me and my patients entire satisfaction. I always have from one to two extra dwts. of gold put on.

Experiments are being made with a view to remedy the tendency to discoloration, and it is hoped, will be successful, and if so, I can confidently say it is the best dental plate made, for the success of a denture depends largely on its accuracy of fit, and a deposit plate must fit, if the model is correct; it can not do otherwise. The strength of the deposit plate is equal to 18k. rolled gold plate. Any can satisfy themselves of this by taking a piece of each and bending back and forwards until it breaks.

It is as strong as gold; it is better than rubber; its fit is better than any other plate. The only thing against it is that in some mouths it is liable to discolor, and this slight defect can be overcome by extra gold and *cleanliness*.

Respectfully,

C. S. STOCKTON,

November 1, 1891.

17 W. Park St., Newark, N. J.

## FOR DENTAL REGISTER.

Dr. Taft :—

For more than three years I have been using a Shaw Dental Engine, and like it very much but for the bother of elbow springs breaking. After using about two dozen duplex springs I procured a single spring manufactured by Hood & Reynolds, of Boston, that is sold at ten cents. This I covered with a piece of French rubber nursing bottle tubing, the same length as spring which makes a good sleeve. I have put this spring to as severe tests as any elbow spring that I ever had and it has stood me over a year. Some of my friends have used the same for several months and report equal success.

We can recommend this to any who have been annoyed by broken elbow springs as worthy of a trial.

C. W. STAPLES, D.D.S.

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## EDITORIAL.

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### Aluminum—The Metal of the Future.

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An article in the January number of the *Cosmopolitan* makes some very important and interesting statements in regard to the method of procuring and working aluminum; its properties and uses. The method of separating it from the elements in nature with which it is associated has been, until within a recent period, a very difficult and slow process. Great progress in this respect has been made, however, within the last half dozen years. By the older methods of production, aluminum cost more than its weight in gold. The valuable properties of the metal have been so fully recognized for the last half century and more that there have been persistent and continued experimentations carried forward with a view of cheapening the process until now it is produced for fifty cents per pound, which, comparing its bulk with iron would not be more than ten or twelve cents per equal pound volume, and the strong probabilities are that its production will be still farther cheapened; to what extent, however, we will not venture to predict.

It is an important fact in connection with this subject that next to oxygen and silicon aluminum is the most abundant element on the earth's surface; it is found every where; does not require to be mined from the depths of the earth, but is all over its surface. A great and radical step was made in separating this metal in 1886 by Mr. Chas. M. Hall, of Oberlin, O., who applied for a patent covering the decomposition by electricity of a fluid bath, consisting of aluminum fluoride and sodium fluoride in which alumina had been dissolved, and though this was contested in the Patent Office, Mr. Hall was allowed priority of invention and the patents were granted him. The process is now installed on a large scale at Kensington, on the Alleghany River, about eighteen miles above Pittsburgh, where with dynamos of 500 horse power, about 500 pounds of aluminum are produced daily. The process is as simple in operation as in theory. The baths are kept melted by the heat of the immense electric current passing through them, which at the same time decomposes the alumina in solution without decomposing the bath in which the alumina is dissolved. \* \* \*.

"In Mr. Hall's process the electrolytic preparation of aluminum has reached its climax of simplicity, and when fully developed, of economy. By this process aluminum is now being manufactured at a cost less than fifty cents per pound. The present practical application of this process is in a large measure due to the energy and ability of Cap. A. E. Hunt, of Pittsburgh, President of the company.

"The present status of the aluminum industry is as follows; There are six establishments actually producing pure aluminum, viz.: The Pittsburgh Reduction Co., working Hall's patents; The Metal Reduction Co., in Lancashire, England, working Hall's English patents; The Aluminum Actien-Gesellschaft, working the Heroult process at the Rhine Falls; The Cowles Electric Smelting and Aluminum Co., at Lockport, N. Y., The Cowles Syndicate Co., at Stoke-on-Trent, England, and the Works of Bernard Bros., at Criel, France, who are using an electrolytic process somewhat intermediate in its nature between Deville's electrolytic process and Hall's."

Questions as to the utility and purposes for which aluminum may be used are frequently asked. At the present stage of its development, in this respect, it is impossible to speak with any degree of fullness and definiteness. It has already been used in many directions; it possesses various valuable properties; its weight being so much less than that of any other known metal, and especially of the metals most used in the arts, is a very important quality indeed. In the words of the writer above referred to, aluminum is only  $2\frac{1}{2}$  times as heavy as water, while iron is  $7\frac{1}{2}$ , brass 8 times, copper 9 times, silver  $10\frac{1}{2}$ , lead 11, gold 19 and platinum  $21\frac{1}{2}$  times.

Many uses have been suggested to which aluminum may be applied, but while considering this subject it must be borne in mind that aluminum while only one-third as heavy as steel, is also only one-third as strong; still a rod of aluminum of the same weight as a rod of steel would have the same strength; for use in large and heavy structures such as bridges, buildings, etc., this fact should be borne in mind. But aluminum alloyed with other metals gives another aspect to this question; some of these are well nigh, if not altogether, the strongest metals we have: five or ten per cent. of aluminum added to copper forms a beautiful bronze of a golden color and is as strong as ordinary steel; a small portion of copper or titanium added to aluminum makes it much stronger without perceptibly increasing its weight.

Another property of aluminum that adds to its value is its resistance to many strong corrosive agents; it is less easily acted upon by the ordinary corrosive agents than silver; it resists in a very marked degree sulphurous vapors and fluids, these having not the slightest blackening effect on it, while silver is rapidly corroded by such agents; this property gives aluminum a decided advantage over silver for all sorts of table ware, and for ornamental work. The acids of the body have no effect on aluminum, so that, surgeons use all sorts of instruments made of it with great satisfaction, as to the cleanliness, as well as using it for suture wire, supports, tubes, etc. Nitric acid has little or no effect upon it.

One of the most important uses of aluminum is for cooking

utensils; three important properties make it of value, viz.: lightness, resistance to corrosive action, and great conductivity of heat; the reduction of weight in such vessels is an important matter to those who handle them; the second property enables them to last much longer than those made of the ordinary materials; and by the third it is proposed that better cooking can be done. Aluminum has not only the property of readily conducting heat, but it also has a remarkable power of retaining it. Almost daily some new uses for aluminum are suggested, and actual application made; these are greatly increasing since the great reduction in price.

One of the chief difficulties in the way of working aluminum has heretofore been the difficulty of soldering it, but recently this problem has been completely solved by Mr. Joseph Richards, of Philadelphia. Aluminum can now be soldered as easily and as firmly as copper or sheet iron.

In regard to aluminum for dental purposes, it has been used with varying success in some degree for over twenty years.

It has been used by casting and in plates. James B. Bean, D.D.S., of Baltimore, Md., was the first who formed dental plates by casting. It was, however, by a very difficult and uncertain process, and at that time it was almost impossible to secure aluminum free from baser metals which very greatly impaired its permanency in the mouth.

In later years the process of casting has been very much simplified by Dr. Carroll, of New York City, and the success greater from the fact that pure aluminum is now easily obtained; but at the best, this is a process requiring considerable experience, practice and great care. Aluminum for artificial dentures is more easily worked in the form of plate, just as gold or platinum, and as easily manipulated as either of these metals; teeth can be attached to it either by soldering, or on some accounts better with rubber, as the sulphur in the rubber does not affect the metal in vulcanizing. This metal is as acceptable to the tissues of the mouth as any metal that is used for dental purposes, and when well adapted to the parts makes one of the most comfortable artificial dentures that is made. Some experiments

have been made with alloy of aluminum for dental plates ; we are not aware, however, that any thing very satisfactory has been, as yet, obtained in this direction ; but we will not pretend to assert that success may not in the near future be attained in this direction.

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### **The World's Columbian Exposition.**

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Quite a great deal is being said and printed about the World's Fair, but when we think of the magnitude of this undertaking and of how many thousands are interested in it, not only in this country but in nearly every other country on the face of the globe, we are astonished that we do not hear and read more about it.

First of all we will notice that it is at the present moment giving employment to many who might otherwise be suffering for want of work, and when we hear that from thirty-five to forty car-loads of construction material are arriving daily, this alone gives us some idea of the rapidity with which the buildings are rising, but if we try to imagine what those buildings will contain when completed, it baffles us altogether ; and all we can say is, we know no one will go away disappointed, for there will be such a multiplicity of things both interesting and instructive for every man, woman and child who may have the privilege of visting the World's Columbian Exposition.

C. W. Wynkoop, who has been sent out by a London syndicate to find the gold mines in the Biblical lands of Ophir, where King Solomon and the Queen of Sheba got their riches, will make a report of his investigations, and promises to furnish some interesting matter for the mining department.

Major John Wilson, of Auckland, New Zealand, has submitted a proposition to the Foreign Affairs Committee to bring a colony of Maoris to the Exposition, house them in their native-built forts, and let them show their native costumes, home-life and methods of warfare. The proposition is regarded with some favor as it would add greatly to the value of the general ethnological exhibit of the Exposition.

Then we understand that Columbia, S. A., will celebrate the Anniversary of its Independence by opening an Exposition on July 20th, 1892, which will continue until the end of October. It will embrace an extensive showing of the resources and products of the country, also a historical, archæological and ethnological exhibit. At the close of this Exposition the best portion of the collection will be sent to the World's Columbian Exposition as part of the exhibit from the Republic of Columbia.

British Columbia has decided to build a structure which will be a novelty in architecture. It will be composed of every variety of wood known to the forests of that region. The building will consist of sections of contrasting woods neatly mortised together. The roof will be of native slate and a variety of cedar shingles. It is intended to ship the building in sections ready to be erected on its arrival.

And now while we are mentioning a few things that others are doing to add to the interest and attractiveness of this great enterprise, we may well ask the question, What is our own department doing? From letters received we know that great zeal and enthusiasm are manifested among the leading dentists of every State, and they are working hard to make their department as attractive to their professional brethren in this country, and those who shall visit them from distant lands, as well as to all interested in every thing concerning the preservation of the teeth, etc., etc., as any other department. Much useful information is being gathered concerning the profession and practice of dentistry in every State of the Union, and we hope to have a very large exhibit of instruments and appliances that were used in former times, both to torture and relieve, and also many of the best and latest inventions in use at the present time, and by a comparison of the two we shall be the better able to judge of what science has done for us in the last two centuries at least, and no doubt shall find the improvements in dental apparatus and workmanship have kept pace with those of all other trades and professions. It is with pleasure we note the unity of purpose evidenced in the letters received from all the States, east as well as west, and with true pride in this department, predict for it a grand success.

E. B.

# THE DENTAL REGISTER.

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## COMMUNICATIONS.

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### Address by President Betty.

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#### PAPER AND DISCUSSION.

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The Annual Meeting of the Ohio State Dental Society held in Columbus  
Dec. 1st to 3rd, inclusive, 1891.

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Though I see I have been mentioned on the programme for the conventional annual address, I must, nevertheless, this time, honor the custom "more in the breach than in the observance."

It seems clear to me that the presiding officer should exert himself more in wisely and justly administering his executive duties than posing as the reader of the initial paper at such a meeting as this, bringing together as it does the talent from various parts of our own State and distinguished visitors from others, all of whom have come prepared to present matter of much importance. It is gratifying to note that so many have taken a hand to keep the cause of education in its forward march, and I sincerely believe that the present meeting will add much to the fund from which all draw their supplies. Every mite that is added is so much gain to that training, that experience which we denominate "education," and every one should feel proud to be a contributor.

I should like to express my approval of the new interest this society has taken in clinics, and that the beginning made this year will be but an earnest effort of what we may expect in the future, and to that end we can, one and all, assist very materially if we only determine so to do.

Although great advance has been made within the past several years both in scientific and applied dentistry, as well as in college training, and the increased number and quality of our periodicals, we have yet much to learn and much to do, and as the wish is father to the thought, we will now proceed to business.

## Care of the Teeth During Pregnancy and Lactation.

BY E. H. RAFFENPERGER, D.D.S., MARION, OHIO.

Read before the Ohio State Dental Society, Columbus, Dec., 1891.

This may seem rather a peculiar subject, but it is one that has caused no end of worry and anxiety both to the patient and dentist. It is no longer a mere matter of doubt and speculation that the teeth are seriously affected during this trying period of a woman's life.

In the preparations incident to a wedding now-a-days the dentist is consulted really as often as the dressmaker, and wise is woman who is so thoughtful of the possibilities of the future.

The old saying "a tooth for every child" is only too true, and matters seem to grow worse instead of better, the longer we live.

A woman with poor teeth, is rather the rule than the exception. One half of the married women of to-day will tell us that they had good teeth until the birth of their first child, and that their teeth have been going to ruin ever since.

Whether this destruction of the dental organs at this time is due to the privation of the tooth, of the tooth-building substance, or to an extremely acid condition of the oral secretions, or both, I am not able to say.

Any physician will tell us that his skill has been taxed to the utmost, and his patience sorely tried, in his endeavors to relieve a pregnant woman of some real or imaginary pain and ache in her teeth and jaws. Indeed these pains and aches seem to be a usual accompaniment to pregnancy, nearly as much so as the persistent vomiting, and are about as well understood by the average physician.

And the skill of the dentist is likewise baffled. For this reason I have chosen this subject, not with a view of displaying my knowledge of it, but with the hope that it may open the way for a thorough discussion in which some of the older and better informed members of this intellectual body can bring out some of the many points which no doubt I have overlooked.

We can all testify that the teeth of a pregnant woman are far more sensitive than otherwise, and that the woman herself is unable to bear the amount of pain, which otherwise would hardly be noticed, and on the whole she is rather an undesirable patient. Still she will call on us, and will continue to do so until the Almighty creates a new order of things; but with a little care and forethought on our part we can save her a vast amount of pain and make for ourselves many friends.

A woman in the early stages of gestation presents herself to us. It does not require a practiced eye to detect her condition; often she will tell us. She desires to have her teeth examined; she is unusually nervous, and her teeth very sensitive, abnormally so; several teeth, say, are found containing cavities. What is to be done with these cavities? Shall we fill them with gold and dismiss our patient, only to have her return in a year or so, with all our work lost? I say no, most emphatically, and I think there are men here who will bear me out when I say it is folly to fill the teeth of a pregnant woman with any idea of permanency.

In the first place she is unable to stand the pain of the preparation of the cavity incident to the introduction of gold, or any of the permanent fillings, and if she were, nature would not assist, as all her attention must now go to the new life that is within and if we can not have the cooperation of this venerable dame, our work is generally for naught.

All we can do, and I am sure it is the best plan, is to fill the cavities with any of the temporary fillings. By these I mean the plastics, which do not require that the cavities shall be so perfectly prepared as for any of the metallic fillings. These temporary fillings are inserted with very little excavating and pain, at the same time answering the same purpose as the gold. We can dismiss our patient for the present and after her child is born and weaned she can have her teeth filled permanently.

She may tell us that there is a sour and bitter taste in the mouth all the time and her teeth are "on edge," and that the act of brushing the teeth is attended with pain, the necks of the teeth being especially sensitive.

These conditions are due to the acid character of the secretions, and can be remedied and largely avoided by the free use of lime water as a mouth wash, and of prepared chalk—this latter most valuable adjunct to the dentist's drug case being packed around the teeth several times a day.

The entire system seems to cry out for calcareous substances, and women will tell of their morbid craving for such substances.

The exquisite sensitiveness found at the necks of the teeth can be governed and cured if the chalk fails, by a little nitrate of silver, pulverised, and applied by means of a sharpened stick first moistened in carbolic acid.

This same remedy, or application, can be used with success on the "canker" sores so often found in mouths of our patients.

As to the extraction of teeth for pregnant women much has been said; some will tell of the dire results therefrom—that it is safer to allow the woman to suffer the "torture of the damned" than to attempt to extract any teeth for her. I contend that if there are any teeth to come out they ought to be extracted at once, as the momentary pain of the operation is not so trying as the continual aching.

I have extracted teeth for women at all stages of gestations and have not heard of any bad results.

One writer sums the whole matter in very few words: he says, "that if the extraction of a tooth would produce miscarriage our offices would be filled all the time with women anxious to have a tooth extracted."

As to the prenatal influences on the child I have never heard of a child being "marked" with a pair of dental forceps or dental engine. So I do not think we have any thing to fear from that source. But I do most firmly believe that when a woman's nervous system is broken down with the toothache the nervous system of her child will also be seriously affected.

We should instruct our patients in the use of such food as will go to the formation of tooth and bone substance or structure. What the child-bearing women of to-day lack is the good, old-fashioned food of our grandmothers, well cooked and plenty of it, such as corn bread, bran bread, mush and milk, etc.

I have frequently had women tell me that their grandmothers lived to a ripe old age and did not have a decayed tooth in their mouths.

The manner of having children has not changed, but the mode of living has made rapid progress toward the worse.

The same care should be given to the teeth during lactation, as there is the same drain on the system.

#### DISCUSSION.

*Dr. H. A. Smith, Cincinnati.*—I fully agree with the essayist that this is an important subject. But if true, as stated, that the teeth of pregnant women are predisposed to decay, we certainly should be able to give good and intelligent reasons for it. It is supposed that during gestation the structure of a tooth changes from its normality. The statement that there is interstitial change in the relation of the matrix or organic portion of the tooth and lime salts; that the lime salts are perhaps diminished in quantity, has not been proven. If this were true, would it account for the beginning of caries during the period of pregnancy? Caries begins upon the enamel of a tooth. Could the enamel, where we have such a large proportion of inorganic material, be changed interstitially in the period of pregnancy? If it is not true that we have either a chemical or physical change in enamel or dentine during pregnancy, we must look for an active cause of caries in some other direction. It must be due, then, to the character of the secretions of the mouth. If caries, as we believe, begins by a fermentation whereby an acid is formed, then the secretions must be of a nature to promote fermentation in the oral cavity. Does caries attack sound teeth more frequently in pregnant women than in those not in that state? We are not quite prepared to answer that. But if teeth have been filled in the mouth prior to pregnancy and this condition supervenes, I think it possible that we have a recurrence of caries about these operations more frequently than we would have in the absence of this condition. That, of course, must be accounted for on the supposition that the secretions are not normal, that they invite those conditions which induce caries.

*Dr. J. Taft, Cincinnati.*—I am not prepared to controvert

the common opinion in regard to this subject. We very frequently, almost universally, hear it said that the teeth during the time of gestation are more susceptible to the influence of decay than they were before that period. Then after that period has passed they return to their original or more normal condition. I do not mean that this is an abnormal condition, but they return to a more favorable condition. My impression is, and I think the experience of every close observer will warrant the conclusion, that the teeth during the time of gestation and lactation do decay more readily than they did before. As Dr. Smith says, it becomes us to ascertain the cause, if possible, of this condition. I take it that this is found in perhaps two or three things. We are brought to this conclusion by observation; though not as many experiments have been made in this line as there might have been. The analyses during both these different periods of life might easily be made by some one who would take it up and carry it on and determine some of the facts to which reference has been made, especially with regard to the change in the relative amount of constituents of the dentine. I have no doubt there is a change in the relative amount of the organic and inorganic constituents of teeth. That expression is subject to criticism, but we all know what it means, and with it we may rest satisfied for the present, at least. I do not see how there can be any structural change in the tissue. There may be a change in the relative amount of the organic and inorganic material by one or the other being withheld. Then there would be a change in the relative amount of these materials.

It has been assumed by many, and the opinion is largely entertained, that in the demand upon the nutrient function of the body the inorganic material of the teeth is not as liberally supplied during the period of gestation and lactation as before. It seems a rational thing, and perhaps it is supported somewhat by analogies which we might trace as well. I am hardly able to explain the phenomena which perhaps every close observer has realized in this particular. It is often found that teeth prior to this period are firm and hard and not predisposed to decay; perhaps not decayed at all, but soon after or almost contemporaneous

with the occurrence of gestation the teeth begin to decay. They are also more sensitive. Observation teaches us that during this period more than at other times the teeth are likely to decay, or to take on a higher degree of sensitiveness than they did before, clearly indicating that some change had taken place. Is that dependent upon a change in the relative amount of the constituents of the tissues, or may it depend upon something else? It is clear that there is a change. Some teeth are more resistant, are more hard and dense, and but little disposed to decay. One of the explanations of this is in the change of material that is found in connection with the disturbance of nutrient function, and causes also an excited nervous irritability in the tissues and in the body as a whole, because there is a higher state of nervous excitability under this condition than prior to it or after it has passed by. Another is a vitiation of the oral secretions; a vitiation not only of the oral secretions, but of the gastric secretions as well. The nausea of this period indicates much. This nausea does not occur without some gastric disturbance, and the gastric secretions and the secretions of the mouth will also be influenced manifestly by the condition that brings about the nausea. The secretions of the mouth are not only vitiated, as can evidently be ascertained by analysis and close examination, but the gastric juices are also vitiated. Indigestion accompanies this condition of nausea which is very unfavorable. It is unfavorable to the proper performance of the nutrient functions. If there is indigestion, and there usually is, there is impairment of the process of nutrition, and not only will one or two tissues of the body suffer, but all that receive nutrition will suffer as well. The teeth, therefore, will suffer on this account from a want of nutrient supply. It has been stated that there is a demand made upon the nutrient function of the body for an increased nutrient supply during gestation, and that in proportion as this new demand is made, the tissues of the mother will fail in receiving their proper supply. I have no doubt this will occur in cases where the digestion and the assimilating power are not strong, where there is not proper exercise of the body. There is, no doubt, cases in which this function is so well performed that there

is no general impairment experienced anywhere in the system, but in those cases enfeebled in any way, or not strong, they would necessarily suffer, and especially so if these interruptions in the digestive and nutrient processes were set up. Under these circumstances there will be more or less a deficient supply in the nutrition of the various tissues of the body and of the teeth as well. It may be asked, Why don't other tissues of the body suffer as well as the teeth? If closer attention were given, this would be found to be true. It is true in many cases that there is a high degree of nervous irritability which exists then and does not exist under other circumstances, or did not exist before. If this be true, to what are we led in the way of a remedy? We should simply avoid those things that would disturb or impair proper function. If there is enfeeblement in any wise, tone up, strengthen, support the system and aid the nutrient processes, so that a sufficient supply may be made to all the structures of the body of both the mother and the foetus as well. Also protect the mother during this time as perfectly as possible from all irritation, from all disturbance both mental and physical, and have her maintain the best possible surroundings and conditions for the carrying on of that great and important function that is being carried on in her body. This is a great and important matter, and great care ought to be exercised for the mother during the time of gestation and lactation as well, because some impairment is as likely to occur during the period of lactation as during that of gestation. Careful attention is needed here in the way of giving proper food, having the system in the best possible condition for digesting and assimilating it. We should have the mental condition of the mother in as perfect a condition as possible, free from all exciting and disturbing influences, free from grief and over-joy, free from any perturbations or excitements of the mind that would tend to destroy the equilibrium or the balance of the various functions of the body. When that is done, about all is done that can be, except the local treatment which was mentioned in the paper. This is a mere surface matter. The matter of keeping the mouth in as healthy condition as possible by local treatment, the matter of attention to the

teeth, relieving them from great disturbance from aching or from diseases, and filling the cavities of decay with the least possible disturbance to the patient, are all clearly indicated. These things constitute the principal treatment during the time of gestation and lactation.

*Dr. A. O. Rawls, Kentucky.*—I do not believe I can contribute any thing of interest to this subject. There is very little to be said beyond what we have heard advanced by authorities on kindred subjects. I am somewhat inclined to doubt the theory or statement advanced by Dr. Smith, that there is no difference at any time between the organic and inorganic substances. In the first place it does not seem to me to be consistent, even though I can not prove by the aid of the microscope that there is a difference between organic and inorganic substances. There are a great many things we can not prove that we really know to be so. It is said that there is very little, if any, nutrition between the terminals of the nutrient current as it is known to-day to the microscope, and yet we can not perceive how tissue can be made at those points where, apparently, there is no nutrition or circulation of the nutrient current, and yet it is so. So it seems to me that when there is a disturbance, an aberration of the function of a tooth substance from any cause, whether it be lactation, gestation, or what not, there must be a change in the amount of the assimilation. We could not have disturbances without that. My idea about that is, that the tooth loses to a certain degree, not exactly its assimilating property, but the amount of substance that it formerly had to supply the waste particles as they are passed off. You say there are no absorbent vessels in the dentinal tubules; nevertheless there is nutrition, and I have believed of late years that there is a disturbance of the nutrient supply to all parts of that tooth, both the dentine or the enamel. Now if there be that condition, and if the enamel itself is taken into the nutrient circulation, if that current of nutrition has been at all interfered with by any process, we are liable to have a weakened condition in the tooth substance, and there is liable to be a deficiency of the chemical constituents of the inorganic or organic material, otherwise we could not have

this want of nutrition where the microscope fails to find the current, the canals or the directions by which the nutrient supply goes to the different parts. Wherever we fail to find out that, I believe beyond there are those canals or some means by which this nutrient supply is kept up which the microscope can not see. It does not seem to me to be reasonable to believe any thing else. I believe that this current is kept up between the enamel of the tooth and the end of the current. I believe there is a difference between the aged and youth, and between the periods of gestation, lactation, and other periods in the life of a woman, that makes it more easy for any acid or alkaline condition, as the case may be, to affect a tooth. It is true where the enamel is not entirely broken away, if we go above that we might not have decay, yet underneath the enamel we may have a weakened condition of the enamel itself. I believe that within the substance of the enamel there is just as much life in it comparatively as there is in any other part of the body. I do not believe we have a thin line around us, or a thin skin without more or less life in it. We all know that the skin appendages must have nutrient supply to keep them in action, otherwise they come off the same as the condition in catarrhal inflammation. They are all thrown off, they can not exist in different parts of the body, they must have life. My finger-nails have life in them. They must have nutrition or they would not grow; therefore, while I do not believe there is a disturbance from these conditions, there is, I think, a lessening of the nutrient supply from some source by some reason or other to the tooth of the mineral constituents. We know that in the plastidule the earthy matters are grown to form a higher type of life. We know that the higher the type grows the more lime salts it would need; so it is with the foetus in the mother's womb. It is a large plastidule, it has no mineral substance in its body, and there is a greater demand for that special material on the part of the child than there is for any other material. Therefore the current of nutrition that carries this substance to be assimilated, or rather the demand of that particular portion of the body for lime salts is so much greater that it is taken in large quantities, and probably

thus deprives other parts of the body of their original amount of supply. We have no absolute means at our command of telling just exactly how this is brought about, nor is there any special means of proving it. We have to grope more or less in the dark in these cases. We can not reason as well upon this subject as we have on many others which we know just as little about, yet we know to be true according to our clinical knowledge.

As to the means of treatment, that portion of the subject has been touched upon by Drs. Taft and Smith, and the writer of the paper. We forget in our eagerness to be useful to mankind, and especially with women in this condition, that they are not the masters of the situation always. A woman can not be pleasant under these circumstances. She can not have a happy frame of mind, a calm demeanor and good habits at all times, while she is in such a condition if she would, and in nine cases out of ten they can not attend to their daily duties. In some cases they can not take proper care of their children, do their duty and keep their frame of mind which Dr. Taft speaks of. It is an utter impossibility. The mental anxiety attending this condition is considerable, and we can not break in on the natural tendencies or proclivities of the mind of the mother, or the tendencies of physique, when she is in that condition; in other words, we can not break into those conditions which seem to be natural to that condition of the body.

With regard to the use of local remedies for the treatment, we might possibly help things by advising the use of a supplemental diet, but the question arises whether this diet will be assimilated or not. Nine times out of ten, I am certain, in which you can use all of the means possible for improving the condition of the body, that the patient will be just as well off if they hadn't used local remedies and supplemental diet at all. What is given will not be assimilated or taken up. We want a condition to assimilate the substances that are taken.

*Dr. J. Taft.*—I fully agree with Dr. Rawls in his statement that persons are not always masters of the situation, all I intended was simply to say that the best should be done under the circumstances. Many of us know that much more can be done than is

ordinarily accomplished, that prospective mothers are subjected to annoyances unnecessarily, and a great many things can be avoided if care is exercised. That is all I plead for, that the best condition shall be established and maintained. I recognize the periods of excitement and stress of mind that necessarily exist in some cases. With many women these conditions are not present. After all it should be our aim to free such persons from all irritability, from all the embarrassments possible, and then trust to providence for the rest.

In regard to food, we have a lesson in the kind of food that is so anxiously sought many a time by the patient. You know oftentimes that one article or another of food is anxiously desired, and perhaps it is wise that it shall be given or had by the patient. It will be said that this is subject to certain conditions and variations. This is very probable. After all, if the best possible physiological condition is maintained, there will be the least possible embarrassment in connection with it.

*Dr. C. M. Wright, Cincinnati.*—I was very much interested in listening to the paper and the discussion on it. It seems to me that wherever there is life, it must bear some relation to nutrition, and that relation means not only the reception of nutritious material, but the giving off of waste and eliminating certain forces in the way of heat, etc. The relative vitality of a tooth is a question that we cannot discuss at this time. There is one point, however, and that is—a tooth bears a certain likeness to bone, which has been referred to by both Dr. Smith and Dr. Rawls in their remarks. The question is whether the chemical relation between the lime salts—the mineral, and the animal matter, is fixed or not. Some French experimenters claim, after making careful examination and analyses, that they found a certain per cent., let us say approximately of about 30 per cent. of animal and 70 per cent. of mineral matter in normal bone. They fed the animals (pigeons, rabbits, etc.) on food from which the lime salts were carefully excluded. After starvation which followed the exclusion of the proper proportion of lime salts, chemical analyses were made, and the quantities remained the same relatively; therefore they made the statement that it was

not a *mixture* of lime salts and animal matter but a chemical union, and that the same results followed starvation from any cause. Removing the nitrogenous substances from the pabulum, and feeding them on non-nitrogenous, substances, the bone substance starved, but the chemical proportions remained the same. This has been studied by Charcot and other French writers. How is it then that young bone is soft and pliable, and old bone brittle? Has not old bone more lime salts in it than young bone? No; it is because of the more active life and greater nutritive capacity of young bone. It is more active in taking up nutriment and eliminating waste, and not because it has less lime salts, that we find that it knits more readily after fracture.

I was so interested in this subject that years ago I wrote to Dr. Miller, of Berlin, asking him why a tooth this year could be soft and next year hard, and whether it was due to a change in the relative amount of lime salts?

Two or three years ago Dr. Kirk made the statement (he had control in some way of the diet at a Children's Hospital), which I give loosely, that children upon entering the hospital were in such a condition that he could cut away the dentine of their teeth very easily. They followed a certain diet for a year and the teeth became flinty, so that fire would fly from the excavator. The inference was that this food containing lime furnished a greater supply of lime salts, which was taken up by the living matter of the teeth. Clinically we *feel* a difference with our excavators between soft and hard teeth. We have touched teeth that have seemed soft and not to have had a very large supply of lime salts, while at other times we have touched them and found the opposite condition. The theory advanced seems to be against our clinical knowledge. I am in the habit of teaching nursing mothers that by supplying them freely with lime salts, their children's teeth will improve in quality. It seems plausible though I am not certain that it is true according to theory. This subject is of considerable interest, but we have no positive reasons why we do thus and so. It seems to me that we do successful things in an entirely empirical way sometimes.

*Dr. C. R. Butler*, Cleveland, — I am glad Prof. Wright

referred to the condition of the bones and tissues of the child and of those of the person more advanced in age. It is a recognized fact that in the child, not only so far as the osseous structure is concerned, but in the whole make-up, there is an activity and elasticity which we do not find in the aged. It is not because there is a greater amount of the lime salts in the bones of the aged than in the child, but that the vital forces are carried on in such equipoise. The nutrition, waste, and repair go on so rapidly that activity and elasticity follow. This is not the case in the aged. It is a recognized fact in physiology that the blood vessels become stiffened and even calcific matter is found present which results in destruction. We do not find that so in the child, because there is vital power enough to keep the flow going on. We have cases where the skin and peripheral surface become, as we say, dead, because the current does not flow around these little points; there is a lodgement of the waste material; it is not eliminated, but lodged on the peripheral surface, therefore we get what we commonly term a "blocking-up."

He speaks of the theory or supposition we have been laboring under; that the teeth do become solidified or calcified in the young subject; that they are easily cut. I recall the statements made by Dr. Kirk, that clinically we know that the young subject's teeth seem to cut away very readily, while after a few years—say four or five years—they are very much harder. Have we really been working in the right direction, or have we the right conception of what causes these different conditions? There are certain conditions during the period of gestation and lactation which are commonly observed, but just what causes them I am not able to state, nor am I satisfied with the statements that have been made with reference to them.

When I saw this paper on the program I was in hopes it would bring out some new features. There is a paper which has been prepared for another society on the same subject by a gentleman in Cleveland which will probably be read next week. I hope he will have something new or better to offer in this direction than has been heretofore.

*Dr. C. H. Harroun, Toledo.*—There is one point which has

not been spoken of either in the paper or discussion, and it is that which relates to the extraction of the teeth of pregnant women. Does it produce bad results? Physicians either actually give the lie to what they believe, or else they tell the truth. They often come to me and request me not to extract teeth for patients that are pregnant, for fear of producing a miscarriage. I do not believe in that theory. When such patients have presented themselves to me I have extracted their teeth without any ill-results. I have never known a case to be followed by unfavorable results, and I have been practicing for thirty years. Do we have marks or impressions produced upon the infant through operating upon the teeth of the mother? That is a question which physicians look to a great deal. Our own mothers believe it. We see disfigurements of the child after it is born, and the mother declares that violence was produced at a certain time.

I removed quite a number of teeth from a lady whom I did not know was pregnant. She was quite a strong, stout woman. I noticed one thing which attracted my attention. Every time I proceeded to extract a tooth for her, she would throw herself back as if in a spasm. Sometime afterwards the midwife came to me and said, "Do you remember extracting some teeth for a certain lady?" Yes, said I. "Well, she has given birth to a dead child, and it is a good thing it was still born." Why? "Because its little mouth was torn to pieces, and its mother stated at the time she had the teeth extracted that it had a tremendous effect upon her." She became restless, could not sit still, and she threw herself into a violent spasm every time I attempted to extract a tooth. I did not disfigure the mouth at all. The roots of the teeth that were broken off were removed, leaving the mouth in a good condition.

The following three papers read by Drs. C. M. Wright, H. H. Harrison, and A. O. Rawles, the one directly following the other; the subjects treated by each having a very near relationship, discussion upon the three papers was had at the conclusion of the reading, for which see subsequent page.

Ed.

## Relationships.

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RY H. H. HARRISON.

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Read before the Ohio State Society, December 2d, 1891.

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How wonderful is the law that binds together all created things and yet in such a way that it does not destroy the identity of any thing.

The earth and atmosphere contain the elements which enter into the formation of all organic or inorganic creations. The law which holds together and controls organized matter is known as life, while the law that controls matter without life is known as accretion.

The higher principles—life and accretion—which have the power to draw and select for their own growth and development the various elements in the form of atoms, possess an inherent quality or characteristic that, to say the least, is phenomenal, and probably will remain so to the end of time.

To observe the law of relationship and see how one order of creation is dependent upon another we will select the highest type of created objects—man.

The Bible says: "Man is fearfully and wonderfully made," and the anatomist and physiologist must necessarily agree to the Bible statement. And yet what is man when the life is removed but a bundle of earthly atoms, water and gas, selected and brought together by the action of that inscrutable law of life. How this life-principle can select and appropriate the different elements must always be answered by—I don't know. But as to the elements themselves we do know.

We do know, first, that all the supply for the human body comes through the vegetable creations, drawn up from the earth and imbibed from the atmosphere in the proper proportion to suit the requirements of the body.

Now, when the power that selects these elements dies, or leaves the body, it is but natural that they go back to their original state. This being true, there must be a law governing this process with active agents to perform the work.

This we know by experience to be true and the same elements that entered into our body may come up again through the vegetable life and assist in the formation of another human body. And so the elements are going around in a circle as the earth, the planets and stars go around in their circular orbit.

These elements that go to form the body, as before stated, are of the quality to establish a well-formed, healthful organism, but do they always do so? If not, why?

By the ingenuity of man himself unwarranted selections are made, and that which nature designed to be used is laid aside and the body fails to get the proper proportions; as a result the organic structure of man is weakened, and as a final result, disease follows. The term, disease itself, is suggestive of this, for it means not at ease, showing the improper relationship of matter.

When our bodies are not properly nourished, when poison is introduced, or when wounded, nature sets up a restorative process, and pain is the result. Pain, then is an indication of improper relationship and is not found in the body where physiological law obtains, save in one state, which is that of parturition.

We all know that the body is subject to pathological conditions and all brought about by faulty relationship. The diseased state of the teeth and associate parts is due to the same great law.

We are aware that in the etiology of disease we have the predisposing and exciting causes. But when asked for the cause of caries, or rather what it is, our text books come to our relief and say: "Caries is a chemical decomposition of the earthy salts of the affected parts;" concise in one respect, and very vague in another.

The predisposing cause is left out, and yet without it we would never have decay of the teeth at all. We can say truthfully caries is the disease, and the cause is defective nutrition.

Let us get at it in another way and say caries, the disease, is caused by imperfect assimilation, and the operation of destruction is a natural law removing dead or effete matter from the

living body. The first is a violation of natural law, while the second is a fulfillment of the same law, and is naught but the tearing-down process, mentioned before, when all dead tissue is dissolved and returns to its original state—"Earth to earth and dust to dust."

The great aim of dentists in the past has been to prevent the secondary cause of caries, leaving the primary cause severely alone. And while the action is perfectly justifiable and commendable in arresting the progress of disease, yet we are not doing all we should or could, in urging our patients to fortify themselves against the violation of this great law of nutrition.

General practitioners of medicine have not the opportunity to observe the great destruction brought about by the want of better nourishment of the bony system that dentists have. And hence, we ought to speak with no uncertain sound.

Where we find teeth weak and enfeebled, there is also a correspondingly defective development of all the bones of the body wherein is developed as a result, spinal curvature, crooked limbs and a general nervous disturbance.

It is very much the same with the human body as it is in architecture. If the foundation and frame-work be badly executed and made out of poor material no amount of elaboration by paint or finely chiseled sculpture or ornamentation can make it a good and durable building. Then, when we are faithfully combating the disease of caries by the best efforts and most approved remedies let us not overlook that principle which permits this disease to exist. By doing so we may be philanthropists to the coming generation, and dentistry will have scored a high mark in the history of science that will go down along the coming ages with distinction and honor. "So mote it be."

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## Soliloquy of a Plastidule.

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BY DR. C. M. WRIGHT, D.D.S.

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Read before the Ohio State Dental Society.

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I can't go back to the genesis of plastidules any easier than can that special organism known as man satisfactorily account for his origin, and the origin of his dwelling on the earth.

Man has studied the surface of the earth and to a certain extent the position of this revolving ball in relation to other revolving bodies which he sees by reflected light all about him in the firmament.

Man has studied himself as far as he can. He has kept tolerably good records of his actions in various countries and times for a few thousands of years. He has been very curious about his own body too, and has devised some ingenious instruments to improve his eyesight, and then he has picked his relations to pieces after they have died, and made all sorts of experiments with the different pieces. He has stained and dried and moistened and teased and sliced and illuminated these pieces till he has been able to get down pretty close to bottom facts.

He has discovered protoplasm and for years has watched it in its motions and growth in other creatures.

He has discussed it and quarreled over it and guessed about it and has believed a great many things that he could not prove. These guesses he called hypotheses and builds his faith upon them. He has made some pretty shrewd guesses too, for he has guessed that we, the *molecules* of living matter exist, which is quite true, and he has even given us a name "Plastidule." We do not call ourselves 'Plastidules,' nor do we consider it a particularly attractive name, but when man makes such strenuous efforts to get acquainted with us; when he spends years in study to find us out; when he works so patiently with all his knowledge, accumulated mite by mite, for so many years in endeavors to see us as individuals, and acknowledges that he never expects to know more about us than can be gained from observations of

what we do when congregated as squadrons, or entire communities, in masses which he calls proto-plasm, why, we naturally feel kindly toward man and do not quarrel with the name he has given us. We are to him part of the great *unknown*.

We are past finding out. We seem to occupy the same relation to man, as far as his perception goes, as does the God to whom he bows. Man studies God through what he calls the "handiwork of God," and he guesses about his "Creator," and forms images of Him in his mind of how He looks, and how He feels and thinks. He has no assurance that these images are exact—in fact he has every reason to believe that they are not, and yet he holds on to them and treasures them. He addresses prayers to them. He kneels down and supplicates, each man for himself, this god, a separate image of whom he has in his own mind, though he has never seen the original, and believes that his addresses will be listened to and in a measure answered.

Man can not see God but he thinks he knows that his God exists. Man can not see us—the plastidule—the molecule of protoplasm—made up possibly as man believes of still more minute and uncertain things which he calls atoms, and yet he thinks he knows that we exist, and he half suspects that we have very much to do with his past, present and future as a so-called organized being.

He does not worship us. It would look very ridiculous to us as well as to man if human beings should build churches with tall steeples and meet every now and then in these churches to offer up praise to us—the Plastidules.

Still we have the satisfaction of knowing that as men study about us more, as they spend more time guessing about us and thinking about us they have a very distinctly increased reverence for us. They reverence us as the Unknowable—the unknowable, though named, which so mysteriously envelops the life of man.

He can not define *life*, a word which he uses every day and thinks he knows about. He knows something about the manifestations of living beings and of living matter, and he strongly suspects that back of all these manifestations, these phenomena

which he studies, is the plastidule. Well, so far, at least, he is right. There is a strong likeness existing between the life history of a man and the life history of a plastidule, between men and their relation to mother earth, and plastidules and their relation to mother man. The man had ancestors away back in the dimmest past and during all that time, and now, and ever, he will be only a part of the earth the origin of which is said to be the heat of the sun. Every child born to man, whether he be at present of high or low degree in regard to health, or wealth or position, whether he is called king or whether he is called peasant, is an animal with a pedigree which we, the plastidule, can trace back so far into the dim past that even a description of the surface of the earth and of the condition of the atmosphere at that time can be but vaguely impressed upon the mind of the present man; a time when with difficulty we, the plastidules, rearranged the crude carbon and the gasses oxygen, hydrogen and nitrogen, the molecules of which are so unstable, into a diet for ourselves, so that we could exist as individuals and make up communities like the cell, and manifest a peculiar kind of force correlated to all force, and by slow and painful adaptation and re-arrangement of these same molecules and by constant effort toward perfection and harmonious action among ourselves we were enabled to unite as cells with special duties until we developed the organism which we now know as man.

. It has taken us myriads of years to accomplish this, and yet we have remained the same and our work is going on. We are the unknown, the unknowable. Our laws of life govern all life. We exist and have always existed, for we are the *breath of life* that was breathed into the historic Adam. As the breath of life we inspire all so-called living matter whether in a one-celled micro-organism, a grain of corn, a majestic tree, a crawling worm, a buzzing insect, a chattering ape or a highly developed, intelligent man, and in this dominant creature man, this breath of life pervades the nerve cells in the cortex-cerebri making memory, imagination, reason, judgment, conscience possible to him just as it does the cells which by other modifications elaborate the shape and character of each individual's finger nails, and

we are so intimately associated in each organism that the microscopic seed of that complex organism (which when properly planted is capable of producing another and similar complex organism) bears in its minute body the impress of every plastidule in the entire body, the impress, not only of the direct parent of the seed, but of past generations of parents and of all the possible crossings and variations and ramifications of past ancestral impressions. Man knows this fact and discusses the phenomena of atavism, of heredity, of a tendency to revert to a previous type. We are not only intimately associated, we plastidules, with every past and present impression made upon ourselves as we exist and have existed in the tissues high and low of an individual and his ancestors, but we are one with all other plastidules in the entire world of organisms and man is correlated to all not by blood, but by the breath of life.

Through us, the plastidule, man then is a part of all life, and the nearer he approaches harmonious correspondence the nearer will he fulfil his destiny.

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### Heredity.

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BY A. O. RAWLS, D.D.S.

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From a scientific standpoint the study of Heredity virtually includes that of life in all its forms, from the most simple or lowest order to that of the highest and most complex organization. It embraces not only all of biology but adds other problems such as diversion or variation from typical forms, and reversion to earlier or remote ancestors, progenitors, etc.; in brief it includes the origin of life and species.

While an elaborate and detailed consideration of the various phenomena appertaining to this subject in its entirety as understood by numerous scientists, from the days of Lemareck and Darwin, down to the present time with its Spencers, Tyndalls and Huxleys, might not be uninteresting, yet the necessary scope of such consideration would preclude its appropriateness before this body. Some few among the world's recognized lights have

delved their lives out to accomplish that which they have upon this subject, but the key which would unlock their store-house of knowledge is not made in a day.

W. K. Brooks, in his "Law of Heredity", opens the first chapter with the following statement, to wit, that "to the ordinary un-scientific reader the word heredity may perhaps suggest nothing more than a few curious cases where an odd peculiarity of the parent has been transmitted to the children, or it may recall the hereditary transmission of a tendency to certain diseases, or the mental or moral idiosyncrasies of the parents."

This is true if we take for granted his statement that a few curious cases when an odd peculiarity of the parent has been transmitted to the children, means many, and are of a physical character, and he surely means this, for his statement relative to the transmission of mental and moral idiosyncrasies includes all else transmissible.

The foregoing conceptions of heredity by the common mind or unscientific reader are virtually termed by scientists "odd cases, the tricks and accidents of heredity." Now while it is with these tricks and accidents of life's variation we are the more cognizant, and should bind our efforts, looking backward for a solution of, I cannot help but animadvert to the ideas of past research, which would term to-day's changes, tricks, and accidents of heredity of progenitors and environment, and associate the earliest known specialization of life with anything else but what such research has pleased to name, "Tricks and accidents."

They are results of such common observation indeed as to be recognized by the un-scientific mind, but nevertheless based upon laws as absolute and unswerving as are any other results growing out of natural selection and environment.

As progeny of the past, we have received the sum of impress, mentally and physically of countless ages, and our children will receive the same, added to which will be the effects of a weakened or strengthened, or in any wise changed condition of demand upon special organs or functions growing out of the hidden tendencies to variation of their immediate ancestors and environment differing from that of the latter. Since writing the above,

I find in W. K. Brooks work on "Heredity", chapter, "Evidence from Variation," the following, to wit: "We can also understand how a tendency to vary may be hereditary, for if certain cells of the body vary, they will exercise a disturbing effect upon adjacent or related cells, and these transmitting gemmules will hand on the tendency to vary to succeeding generations."

In his recapitulation and conclusion, Prof. Brooks has given us an additional statement in close association with the leading idea in the above, viz., that "There are many reasons for believing that variations under nature may not be so minute as Darwin supposes, but that evolution may take place by jumps or saltations, and that according to his view a change in one part will disturb the harmony of related parts, and will cause their cells to throw off gemmules. A slight change in one generation may thus become in following generations, a very considerable modification, and there is no reason why natural selection should not be occasionally presented with great and important saltations.

These latter statements are in perfect consonance with views which I have expressed at different times in the past, relative to the comparatively rapid transmission of the results of impress by certain influences upon various organs, to the generation in which they originated. If true, that most authority upon the subject of biology recognize the fact that variability and environment operate so slowly, that ages upon ages are required to evolve from generic types very marked changes of organisms as to form and functions.

Probably the most prolific animal known to us, and therefore the best suited for experiment looking to changes of form in their organization, is the white mouse.

By selecting from a litter of the latter a male and female, the largest and strongest of the lot and removing the external ear and tail, breeding them, and continuing to select the healthiest and best from each continuous breeding, and depriving each of ear and tail, you can have at the end of about eighty breedings, mice without the caudal appendage and external ear.

The Jewish nation evidently envolved the hooked nose, so

common to that race, through their form of salutation, that is by taking the end of that organ between thumb and finger, and bowing their heads and bodies forward and downward. The Celtic race probably acquired the short and turned up nose by the constant wiping that organ upward with the palm of the hand.

The Indian and other wild tribes have kept up the inheritance from the generic type of pigeon toes, by turning their toes inward, the better to balance their stooping bodies while in pursuit of game or hiding from their foes.

The Mongolians under subjugation to the Tartars were made to train their hair up from the temples, and fasten it tightly over the top of their heads, which became a fixed habit and resulted in time in obliquity of their eyes.

The evidences herein adduced for the purpose of presenting an idea of how external organs may be caused to vary, or conformation to change by habit, custom, and environment, either forced or of free selection, are, I admit, by no means complete, but sufficient I trust to indicate the possibilities in this direction. Some one, however, may feel like exclaiming with the itinerant dentist from the vicinity of Jamestown or Canada, who had dropped in at a meeting of the American, at Niagara, and sitting in the back part of the room, had been listening attentively to scientific sentences, unabridged, from the lips of J. Foster Flagg, or our lamented Atkinson, when upon looking at his watch he innocently remarked to a neighbor, apparently of the same convictions and species, "Wonder when they'll begin on dentistry."

W. K. Brooks, "Evidence on variability from intellectual differences;" says, "That human advancement is, of course, widely different from the slow progress of the lower forms of life, but is fundamentally the same." In his closing chapter, also the following: "According to our theory of heredity, a change in one part of the body is in itself a cause of variation in related parts, and as changes thus tend to occur where and when they are needed, the time which is demanded for the evolution of a complicated organ by natural selection, is brought within reason-

able limits, and one of the most fundamental objections is thus completely removed."

Now, if this be true, and we doubt not it is, for we believe Prof. Brooks is the best exponent of past research on the subject, and the most thorough reasoner extant, on its intricacies, then does it not become our duty, as specialists, laboring in the field of conservation of important 'organs, for those of our present generation, to have in view also an improvement of the form, structure, and health of such in coming generations.

A study, for instance, of any undesirable physical peculiarity of teeth, jaws and face of a family, the first, second and third generation of which are usually within the scope of our observation, will not only enable us to practice that which comes within the pale of our calling with more certainty of scientific results, but if we would live and labor not alone for those about us, I believe we can be the means of modifying the tendency of our generation to transmit its unhealthy variability in tissue, or disagreeable conformation of organs, and thus hand down to future generations a better basis from which to continue future labor in the line of health, beauty and usefulness until the type is near perfection.

Day by day we are brought face to face with an inheritance of diseased tissue, abnormal organization, and therefore disturbed function. With a fair knowledge of the laws of heredity and peculiarities sometimes attending family and racial proclivities and variation, how much better would the dentist be qualified to intelligently, and satisfactorily handle such conditions, indeed with how much more certainty could he diagnose the character of disease, and pronostigate the results of an operation.

Discussion on the papers of Wright, Harrison and Rawls.

*Dr. C. M. Wright.*—I have nothing particular to say on these papers. I was very much interested in Dr. Rawl's paper; such papers are always valuable. They present subjects that we cannot help be interested in, not only theoretically but practically, in our daily work. I do not wish at this time to discuss the question of heredity or the subject matter of any of the papers that have been read, including my own, which comes up for discussion at the present time.

*Dr. J. Taft*:—I only wish to say in regard to the three papers that have been presented to this body that I doubt whether there is any man present who is in a condition, merely from hearing the papers, to do himself justice in their discussion. They ought to be in the hands of the parties who are to discuss them long enough to consider and digest the salient points of each, and without this there can be very little in the way of discussion of either of these papers that will do justice to the writers, the persons who discuss them, or those who hear.

The method that is obtaining now in many societies of preparing papers and either sending a synopsis, or the whole paper preferably, to those who are to open the discussion, is eminently a desirable one, and it ought to be adopted by this society. Where a paper is carefully perused before-hand by those who are likely to participate in the discussion they can take up the subject and discuss it intelligently. The method of simply talking, for the sake of spending time, in a rambling way without any system is certainly not very profitable. It cultivates a faulty method. The society would do well to revise its method in this respect in the future, and I trust that may be done.

*Dr. C. H. Harroun*:—There is one point in Dr. Rawl's paper that I desire to call attention to, and that is with reference to the Indian walking pigeon-toed. I was brought up in near proximity with two large Indian camps in my early days and was very familiar with their habits, as were also my brothers who live in California, and who are conversant with the manner in which the Digger Indians climb mountains. If you wish to know why an Indian walks that way he will put his thumb down and ask whether you can walk on it. He turns in his toes to get the force of the whole foot. He does not walk on one organ, but turns his foot to get all the toes to strike so as to give him force. By so doing he travels better and easier.

*Dr. Otto Arnold*, Columbus. There were one or two points that occurred to me during the reading of these papers that I think ought not to pass without some discussion. They are points which I would like to have some light on, and they may have been

observed by others. Dr. Harrison spoke of a general weakness of the whole system being always present where there are decayed teeth, or that they are always found together more or less. For instance, curvature of the spine is sometimes found in connection with poor teeth. In the few cases of that affliction that I have had occasion to work for, I found that the teeth were decidedly firm in texture. I would like to know if anyone else has noticed the same thing.

*Dr. J. R. Callahan, Cincinnati.* I was deeply interested in the paper read by Dr. Smith, and have been interested in this subject, more or less, for some time. In the first place, he spoke of the use of carbolic acid, of getting better effects from it, provided it was left in the cavity for several days. It has never been clear to my mind why it was better in a tooth a week than it was the moment it was put in. When it comes in contact with the albumen it coagulates it. If I rightly understand it coagulated albumen is insoluble and will remain in that condition for an indefinite time in the presence of the coagulant. I do not see how carbolic acid can go any farther under such conditions.

He spoke of other antiseptics, with some of which I am not familiar. He referred to terchloride of iodine. After reading Dr. Miller's article, some time ago together with his experiments, I began to use it and have been much pleased with it. After the terchloride has been applied to the cavity and left in contact a few minutes the carious dentine takes on the color of iodine, or the diseased dentine seems to be saturated with the iodine. I have great faith in terchloride of iodine.

A member: Does it not stain the teeth?

*Dr. Callahan:*—No, only the diseased dentine so far as I have been able to ascertain. There may be a slight acid reaction. You can overcome that easily enough.

A member: Is it an irritant?

*Dr. Callahan:*—I think not. I have applied it directly to exposed and inflamed pulps with good results.

*Dr. Otto Arnold:*—I have had some very excellent results from the use of pyoktanin, confining the use of the remedy to the posterior teeth. It is highly soluble in water. In one case

which came under my care a molar, which was quite far back nearly out of sight, a devitalized tooth, soon after the applications of the pyoktanin were made it became a dark blue. I saw a tooth that had been filled and finished perhaps two months later, and it was decidedly lighter, and when I saw it later it was still lighter. I am in hopes that, possibly, the stain would disappear entirely in the course of time.

*Dr. Taft*:—I will ask Dr. Arnold if he attributed the improvement in color to elimination of the agent or to decomposition of it?

*Dr. Arnold*:—I am not prepared to answer that. There were no absorbents, it being a devitalized tooth, I do not see how it could be eliminated.

*Dr. Taft*:—Then there must have been either decomposition of the substance, or it combined with some element of the tooth that was lighter in color or that changed the color. It would be interesting to know which process gave that improvement in color.

*Dr. Arnold*:—I will say that the patient for whom I performed the operation has left the State and I am unable to trace the case further.

*Dr. H. T. Smith*, Cincinnati. I also wish to state a case in regard to the use of pyoktanin in the treatment of teeth. A temporary molar, five or six months after treatment and filling, became considerably lighter in color, and it was believed to be due to the absorption of the pyoktanin through the temporary molar. I have tried the action of chloride of gold upon the decalcified dentine under amalgam fillings, that is placing it in a dry cavity and evaporating again to dryness, then filling with amalgam. The union was much greater than that which takes place ordinarily between the filling and dentine. The principle is used, I believe, by Dr. Land in uniting amalgam to porcelain; placing the chloride of gold on porcelain and evaporating or burning it dry, thus getting union between the gold and porcelain. Chloride of gold stains a black color.

A member: Has it any antiseptic properties?

*Dr. Smith*:—I do not know that it has.

*Dr. H. A. Smith* :—I quite agree with Dr. Callahan in regard to the point he makes about carbolic acid, if used in full strength, that it causes coagulability of the albumen. That means, of course, hardening, and it would soon produce a layer which would resist further penetration. If I used carbolic acid alone in sterilizing a considerable mass of carious dentine I would not use it stronger than a 50 per cent. solution. It is only a question of time with the limited amount of septic matter which we usually find in carious teeth when the sterilizing effect would be produced. I stated in the paper I endeavored to modify the action of carbolic acid. That I would not use it except in connection with an oily antiseptic. That is a point worth noticing.

*Dr. G. P. Gray* :—I agree with the remarks which were made by Dr. Callahan from the fact that we all know what difficulty we have in dealing with a pulp that is very nearly exposed, that is, in a condition such as Dr. Smith has referred to where there is a thin lamina above it. We know in our practice how many fillings we have to remove. We find this condition, the pulp dead, and a thin lamina there. In a great many cases the teeth seem to decay from the inner portion outward. There is a breaking down inward, and, of course, this is liable to be because of the portion left not being sterilized.

Some of the gentlemen have referred to using the new remedy known as pyoktanin. A gentleman told me he had been using it for a year, and it has acted like a charm. I do not think that is sufficient time to judge of results from its use, for many teeth after being filled, become devitalized and form what is called a blind abscess. We know very many times that teeth have these blind abscesses, or at least, apparently so. When we open one of them there is very little, if any, soreness; it does not seem to give much trouble. We diagnose the case; we say the tooth is devitalized, and immediately after an abscess forms or comes to the surface. Of course, we have theories as to the cause of that. It is apparent to me that atmospheric pressure and draining the dentine of fluid, etc., have caused the abscess to develop.

You will excuse me for digressing slightly. In putting antiseptics into cavities the trouble with sterilization is that it is liable to cause devitalization of the pulp. That seems to be the trouble, and whether carbolic acid would not be the best agent rather than the essential oils, under such circumstances, is a question in the minds of some. The essential oils are more penetrating and are more likely to reach the pulp. The pulp of a tooth is so delicate that it has slight resistance; almost any thing will act as a foreign body. Carbolic acid is said to be more local in its action, and if there is a thin lamina it will penetrate sufficiently deep to sterilize it, as it forms a kind of eschar, and will not endanger the pulp.

*Dr. J. Taft:*—I think it is well to give a little caution in reference to this matter. The way in which this subject is approached oftentimes (but not by the paper that has been read) would lead us to believe that in the larger proportion of cases of decay where cavities are to be filled, more or less partially decomposed, disintegrated dentine is left for some reason. Now, in the great proportion of cases there ought not to be, even partially, disintegrated dentine left in a cavity to be sterilized. After all, the question may arise whether after removal of all disintegrated dentine or tissue, sterilization may not be useful in a certain sense. Both sides of that question are dealt with in Dr. Miller's work. In one place in his work I was led to conclude that there was very little, if any, penetration of organisms beyond the line of disintegration. In another place in his work he treats the subject in such a way as to lead to the conclusion that his belief was that organisms are capable of penetrating to a considerable depth beyond the line of decalcification or disintegration of tissue. But then, after all, whether it is left or not, it becomes a question how much we ought to rely upon sterilization. I do not believe that it is as important as many imagine, because teeth were filled and decay arrested for years and years before anybody thought of sterilization, and even decayed portions of dentine were left over a nearly exposed pulp and covered, and yet decay did not progress. I very much doubt if a cavity is thoroughly cleansed from debris, and a portion of partially

decalcified dentine or tissue is left over a pulp, and the walls of the cavity about the orifice are thoroughly dressed and a good filling introduced, between which and the walls of the cavity there will be no moisture admitted—that in very few such cases would decay take place. In years gone by there were multitudes of cases of this kind, made by good operators, and decay did not take place. It is perhaps less often than we think that cavities are perfectly sealed in a filling. I know in many cases we fail to make hermetically sealed cavities by filling. We may imagine that this has been accomplished thoroughly, all disintegrated tissue has been taken away and the filling introduced as thoroughly as possible, yet we know there are defective tracks through dentine that can not be perceived, that are not excavated, and teeth are filled irrespective of them. There will be openings sufficient to constitute a beginning of disintegration of tissue and thus penetrate into the tooth. Great care should be exercised in the preparation of cavities. I do not believe in leaving softened dentine in cavities ordinarily, only in favorable cases where the pulp would be quite exposed by its removal. In many cases it is better to take away all softened dentine about the orifice of exposure and trust to an artificial covering. I am reasonably certain that where the residuum is broken up, where it has lost its structural character, the probabilities are trouble will occur afterwards through irritation of the pulp. Therefore, in most cases, I take away the softened tissue, leaving none of it to act as an irritant to the pulp. I suppose one of the reasons why sterilization is resorted to by so many is to arrest decay, but after all we are led to conclude by the discussion that the great danger is, in the progress of the decay in the dentine beyond the filling. So I think great care should be exercised in forming cavities and introducing fillings as well as in sterilization. I fear we are too much inclined to leave cavities in an improper condition for filling, introducing fillings when there is disintegrated tissue that ought to be removed. If, however, a pulp is covered by tissue that is leathery in consistence and structure not wholly destroyed, it may be retained with a good hope of saving the pulp. I have oftentimes had my atten-

tion called to cases like this, where softened dentine was left in a cavity in considerable extent, and the cavity thoroughly sealed. Years after, when removed, the whole portion was as solid as a secondary deposit of dentine in the cavity. I presume that does not sufficiently frequently occur as to be relied upon as a mode of practice, but it does occur sometimes. I have seen it in cases which I have had in charge, and in cases in the hands of others. We should not put too much stress upon one particular of practice while we leave others without the attention they ought to have. That is simply the point I wish to emphasize in the matter. Let us give attention to every part in these operations. I know that fillings are made sometimes over softened dentine without sterilization, and decay does not go on. Whether decay does not sometimes go on after sterilization may be a question. I rather suspect it does. I have seen operations from the hands of those whom I knew were strong advocates of universal sterilization and I found decay going on beneath the fillings, but in no instance have I seen decay under a filling hermetically sealed and which remained so afterwards. I have yet to see a case of that kind. There may be such cases but I have not seen them.

*Dr. C. M. Wright:*—Such remarks as have just been made by Dr. Taft plunge me into despair, because if his opinions prevail, I see no hope of relief from the slavery of work. When I hear such papers as Dr. Smith has offered to-day I think we are in the right line; the little birds begin to sing about my heart of hope, hope that we shall not have to fill teeth with amalgam, and gold and tin and gutta-percha, and to use the dental engine, the chisel, the file, and the plugger, all the days of our life. The paper would lead us to hope for that time when dental practice will be confined to receiving patients in the most agreeable sort of manner, saying, “Madam, walk in; name, if you please; be seated.” Our instruments will consist of small rods, little swabs, camel’s hair pencils and drugs; when we can tell by the kind of debris the nature of the microbe, whether anærobic or ærobic, pathogenic or non-pathogenic, and select our remedy, pencil the part lightly, receive our fee and bid the madam good morning.

(Laughter). I have been waiting for this all these years. I was quite happy until Dr. Taft plunged me back into the same old rut, which means working from morning till night. (Applause).

“ From early chime to chime  
As prisoners work for crime.”

I am so sorry !

*Dr. A. O. Rawls, Kentucky.* The question of antiseptics in dental practice has been touched upon and I regret I was not present to hear the whole of the paper. Prof. Smith referred to this matter as it concerned the sterilization of tissue or decomposed dentine. I apprehend that the gentlemen who have been talking on this subject have been delving a little bit deeper than they have knowledge of. In the first place, if we consider the question as it refers to decalcified dentine over a pulp, do we know from the gentleman's own statement this morning, supported by Dr. Wright, I believe, that there was no change in the tissue as to calcific matter and animal matter in the youth or aged. If we take it as we have been studying it from the standpoint of Dr. Taft's remarks, then we find that the nutrient canals or currents supply the dentine that is above and below and roundabout with life, etc. We find these canals open or closed, one of the two. Sterilization means this, that the particles or fluid you use for sterilization must penetrate, must go into the substance of that cavity or canal that has been deprived of its lime salts. Having been deprived of lime salts, therefore, there is a change of structure. This knocks out some of the arguments advanced by gentlemen this morning. My idea of sterilization is simply that you have to shut a thing up that is not septic—tissue that is not septic. Septic tissues decompose and disintegrate whether shut up or not. The paper claims that you use a substance that will penetrate or antisepticize tissue. What do you know about antiseptization in these cases? You can not see into it by the microscope. It is a matter of results. You can not tell whether you have complete or incomplete antisepticism. We closed up cavities before without a knowledge of antiseptics, and the results were just as good, and

often a good deal better, because we have been making sick teeth by too much antiseptic treatment when we would not make them otherwise. But there is this much in that practice, that the substance that lies between the exposed, or would-be exposed nerve and the outer cavity has no organization virtually. It is simply a shell or skeleton of that which was, and it being a skeleton it exists as it is simply because of the integrity of this tissue. You do not want to sterilize that. If it has the integrity to stay there you do not want to sterilize it, but to protect it. There is nothing going on in a layer when it is dead and aseptic. I think that that condition of a tooth is just as plain as day, the same as that condition which would be presented by any tissue of the body of a bony nature; that is, if you have decalcification or removal of any special element or particle of that tissue without any outside influences that would conduce to its change, then all you have to do is to protect the integrity of that tissue so long as its integrity will last, until some thing outside attacks it. Professor Taft said there is a perfection, or a possibility of perfection in protecting this condition. That is a mistake. There is no such thing as perfect contact. There is no such thing as the absolute contact of a filling or nerve capping. There is no such thing as that in either dentine or enamel. Therefore, there must be some influences on the outside that work roundabout, and in between, when there is no contact. We can not have it otherwise. As Sir Isaac Newton, the great astronomer, said: "Compress the world into one solid mass and you can put it into two inches square." Where do you get absolute contact of a tooth? At any rate there is no such thing as having absolute contact of a filling or a capping material in such a manner that it will preclude the possibility of changes beneath and about it. We have the experience that a few years filling will conserve a certain portion of the dentine and enamel with comparative contact with it, but when it comes to *absolute* contact there is no such thing as that. That is just exactly what we have to contend with, and what we are mistaken about in our efforts to assist the continuance of the integrity of the tissue upon which we work. We bruise or change

the condition of a surface by hammering, by the chemical influences of a substance which we put in it, otherwise we could protect and conserve by different means to those, but only for a time. As a rule antiseptics are not necessary in cases of deep decay, because, generally speaking, antiseptics have nothing in the shape of septic matter to operate against in deep-seated caries. That is simply a destruction of tissue by a lack of nutrition, and a lack of nutrition does not necessarily mean that there are septic matters there to cause this lack of nutrition.

*Dr. H. A. Smith*:—What about the micro-organisms there?

*Dr. Rawls*:—We do not know that they are always there.

*Dr. Smith*:—Yes. we do.

*Dr. Rawls*:—You can not prove that they are there beyond a certain depth without removing tissue of importance to the tooth, a certain place in the semi-disorganization or disintegration.

*Dr. Smith*:—There is no disorganization in this substance.

*Dr. Rawls*:—You said yourself there were no septic germs, and that you cleaned out the cavity down to a point where there was no septic matter.

*Dr. H. A. Smith*:—When I hear persons of the mental calibre of Prof. Taft and Dr. Rawls address a body like this with such remarks as they have made to-day, I soon discover that they do not believe in the chemico parasitical theory of decay. Dr. Taft does not believe that hypothesis, and hence he is not good authority when he discusses sterilization of carious dentine. If we can fix in our minds just what the layer is we are treating, how it is constituted, what changes have occurred in it, we can better understand the matter. I said we had in the upper layer a portion of softened dentine which was formerly the organic part of the tooth—the matrix. Next, we have a portion of softened dentine in which the micro-organisms are active in producing caries. They secrete lactic acid, which dissolves the dentine beyond the layer in which they are found. But for this chemical action, the softening of the dentine, the micro-organisms could not advance and caries would be arrested. If we accept this theory as true, then an antiseptic is essential to prevent further change in the organic (albuminous) portion which

is left in the bottom of the cavity for protection of the pulp. Now, an antiseptic will do all this without endangering the pulp if it is judiciously applied. Then we have fixed matter, and until we do accomplish that, with all due deference to my friend on the left (meaning Dr. Taft) we have no assurance we can conserve teeth in which the pulps are nearly exposed.

He (Dr. Taft) refers to what was done formerly. I can go back a good way myself. We did not make a record of our cases then as we do now. We observe better now. When we fill a tooth now, if a pulp inflames and dies, we trace the cause. We did not do it formerly. There were hundreds of pulps that died under fillings. We do not have the trouble following filling now which we used to have. We recognize the sensitiveness of dentine; we interpose a non-conductor; we sterilize and all that, and our patients are much more comfortable than before. I know from my own experience that my patients do not come back to me after I fill their teeth with abscess, with the teeth subject to changes of heat and cold, etc. Improved methods in practice come from enlightenment or from the advancement that has been made in dental science. Therefore, I speak from that standpoint, and accept as the best explanation to-day of the etiology of dental caries, the presence of micro-organisms. I use a sterilizer for the purpose of arresting their life forces, changing the soil in which they live and thus wiping them out of existence. It is only on this theory of the explanation of decay that we treat these cases. If we do not accept it antiseptics are not necessary.

The same difference of opinion holds good in the practice of general surgery. There is an eminent man in England, whose name I can not at present recall, who pooh-poohs antisepticism (a member: Lawson Tait, of Birmingham, England) yet he is one of the cleanest men in his operations in the world. He is alone, we might say, in this regard. He does not recognize the need of antiseptics, and yet his operations are attended with great success. But Mr. Tait is an exception. The average surgeon who does not use antiseptics in his operations has dirty hands and finger-nails, and in a great many instances his cases

are unsuccessful as far as results are concerned. It is the clean surgeons, those who adopt such antiseptic methods who are most successful in their operations. Asepsis means cleanliness, and cleanliness—no matter how accomplished—is asepsis. I differ with Professor Taft and prefer leaving the natural covering over a pulp undisturbed if I can prevent further change in it by sterilization. Whenever the pulp of a tooth is exposed to the atmosphere it is liable to become contaminated with septic matter and hence its preservation is endangered.

*Dr. Rawls*:—I may have been placed in a false position before this society on the subject of antiseptics. I did not mean to state that I was not in favor of all antisepticism that was of value to any condition or disease connected with the mouth that we deal with; at the same time I was simply arguing as to the possibilities of the effects in these cases, and not as to the possibilities of our knowledge, as to *how* or *why* they should produce these results, since we have not seen by the microscope any special difference between one treatment and another. Now there is only one means by which antiseptics can produce the result and that is by entering into the substance of the tissues.

A member: If they enter into the substance of the tissues do they become part of the tissues?

*Dr. Rawls*:—Yes, to a degree.

A member: Or are they absorbed by dead tissue?

*Dr. Rawls*:—To a certain extent they are, as carbolic acid or pyoktanin, either one of these substances will be taken up by the absorbent vessels and carried out through the system.

A member: Are they of an insoluble nature?

*Dr. Rawls*:—They must be insoluble. There must be a line of life; there must be an anastomosis between death and life, or a line of demarkation, and where you have dead tissue, what is the difference to you if that is shut up whether you sterilize or not? You can not say that the micro-organisms produce these results. You can not say that they were diseased, they died, and as a result of their death you say an acid was produced. You can not say that knowingly. You assume it. Therefore, we are working in the dark on the subject of antiseptics in a

dead material that we want to save the integrity of. If you would preserve that tissue you put something in that does not belong there, you want protection, not antisepticism, of dead tissue.

*Dr. Taft*:—I want to say a few words in reply to the remarks of Dr. Smith. I would much prefer you would take my own statements as to what I believe, and the theories I espouse than to have him say what I believe, and what I do not believe. I am not so ready to make square assertions about things that have never been clearly demonstrated. I do not believe that there are organisms (vegetable organisms) in connection with all cases of decay of the teeth, and I have said this a great many times. They have some influence undoubtedly, but what that influence is, and exactly how it is operative, I do maintain has not been made clear as yet, hence much of the practice that is employed in this direction is experimental, not to say empirical. It is upon a certain hypothesis that has not been clearly demonstrated. Perhaps many of these organisms live without air (anærobic), and some of them can only live with air. Dr. Rawls is rather inclined to doubt perfect contact or perfect adaptation, which is in one sense true. A cavity sealed up so as to exclude all foreign substance, liquids, every thing of this kind, is hermetically sealed. I believe in the use of antiseptics, but then my use of them is not based upon the theory that antiseptics is a necessity in all cases; that has not been demonstrated.

*Dr. Smith*:—Do you refer to the etiology of caries now?

*Dr. Taft* (continuing):—Not so much that. I refer simply to the condition as it exists and is found. These organisms do sometimes penetrate dentine, but not deeply, however. I have a number of slides of dentine prepared in which it seems that they penetrated and seemed to be in the tubules beyond the line of disintegration and decalcification. One or two of these slides were prepared by Professor Miller.

Just what influence these micro-organisms have in the production of decay is not sufficiently proven. There are various theories on this point. We saw at Saratoga, last summer, a number of teeth in the mouth of a boy in which decay seemed to

have been arrested by the use of nitrate of silver. The action of the caustic upon the tissue arrested the decay. This was done without any other antiseptic.

*Dr. Smith*:—Yes, it was the caustic action of the nitrate of silver which destroyed both the bacteria of caries and a superficial layer of dentine. The silver nitrate by forming an insoluble compound with the layer prevented the further action of caries.

*Dr. Taft* (continuing):—I would like to know as much about it as a great many claim to know. I have not got to it yet.

*Dr. H. A. Smith*:—We should accept the doctrine of Dr. Miller because we can produce precisely the same conditions out of the mouth that we find in carious teeth in the mouth. We can infect dentine out of the mouth and produce true dental caries, therefore we see that this is a plausible theory. I remember it is not many years ago when I was disposed not to accept the so-called mineral acid theory, and I was criticised, in this society, for being a little too advanced. Now it is generally believed that micro-organisms play a very important part indeed; that they are essential to the production of caries of the dentine. Dr. Taft appears to be one of the few who are not yet convinced.

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## **What Causes Variety and Modifications in the Character of Dental Caries.**

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BY J. G. JUNKERMAN, M.D., D.D.S

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Read before the Ohio State Dental Society, December 3, 1891.

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A paper upon this subject can scarcely possess the character of originality, but will subserve the purpose more of bringing out, before such a body as this, the points for discussion.

There are no longer grounds for disagreement among the profession upon the causes of dental caries, and knowing the causes of the disease a study of the character of the agents producing it will reveal, to a considerable extent, the cause of variety and modifications in the character of dental caries. We may sum up

the cause of dental caries as acids and fungi. Although the investigations of Miller, of Berlin, have confirmed this hypothesis, yet in the minds of many practitioners this conclusion has been accepted for many years past. The chief agents, without which there would be no dental caries, being acids and fungi, the character of the process of the caries must depend upon the character of the acids and fungi producing it. The process of dental caries consists of the decomposition, or the solution of the inorganic matter of the tooth by the acids, and the decomposition by the fungi of the organic structure of the tooth. Assuming that the fungi are alike in all cases, we know the acids to be different and upon the character of these acids will depend the character of the caries. The character of the carious process will differ as differs the degree of concentration of the acid, the quantity and the degree of persistence with which it remains at the seat of the disease.

The character of dental caries will be influenced much also depending upon the order in which decomposition of the tooth structures takes place. If the fungi decompose their part of the structure first we will have a caries of rather a hard consistency; a leathery tendency to a softer consistency of the caries will result if the acid dissolves or decomposes the calcareous matter previous to the action of the fungi. There can be no doubt that the consistency of dental caries is dependent upon the time of action of the acid and the fungi.

Quality of tooth structure modifies the character of dental caries. Whatever the character of the agent may be, whether concentrated or diluted, whether persistent or intermittent, or in whatever stage of caries the case may be, the well organized or perfect structured tooth will show a slower progress of disease than the tooth of weak structure. To further elucidate this principle and to present it to the mind in the extreme: when the chemist wishes to dissolve a substance in an acid, or any other menstrum, he pulverizes the substance to produce rapid solution. This comminution of the substance brings about a condition whereby a larger extent of surface is presented for contact with the menstrum, and it is a known fact that rapidity of

solution is in proportion to the extent of surface. This principle may be applied to the process of dental caries. If the enamel prisms, or dental tubuli, are loose in structure there is a greater extent of surface, and rapidity of caries is increased, and though imperfection of structure may be invisible to the naked eye, this ever watchful agent of dental caries has its headlights and reflectors into all the alleys and byways of imperfect development, and is always ready with its regiments of sharp-toothed soldiers to take up its camping ground upon any unoccupied tracts.

Another circumstance which modifies the character of dental caries rests in the fact of the difference in chemical structure between the enamel and dentine. The lime salts of enamel are in excess of those found in dentine, so that an acid may be found strong enough, and in sufficient quantity to dissolve dentine, while the enamel will be little or none at all affected. Dental caries arising from such a condition would find explanation in cavities of considerable depth and small external openings. Such cavities would be the result of weak acids and long-continued action. Caries with wide external openings and superficial in character would result from sudden strong acid reaction and short duration. In both these cases the character of the dental caries is not due to the character of the agent producing it, but is most likely due to the difference in chemical structure of the enamel and dentine. A condition which characterizes the process of dental caries is sensitiveness or a lack of sensitiveness. Sensitiveness accompanies that process of dental caries where the acid of the disease operates more rapidly than the fungi. Such are the soft varieties of caries. It does not then follow that all soft caries are sensitive, for to produce this condition the process of the disease must be such that the dental tubuli are left almost so, or entirely intact. A lack of sensibility will attend that process of dental caries where the fungi are the most rapid in their action, destroying the organic tissue or dental tubuli and leaving the lime salts, producing the hard variety of caries. From these principles we would deduce the conclusion that the very soft and the very hard varieties of dental caries would be free of sensibility, and that we could look for sensitiveness in the semi-hard varieties of dental caries.

Color is another characteristic feature of dental caries. It varies from white to black. The responsibility for the color rests much upon the nature of the agent, but not entirely so, as deposits upon the teeth and the habits of the individual in general, have some influence upon the subject. For example: the tobacco chewer may be afflicted with the white variety of caries, and yet the color may be black from the infiltration of nicotine. The black variety of caries may lose its characteristic color from the introduction into the oral cavity of a variety of decolorizers.

There passes before the eyes of the practitioner a daily panorama of varying changes in the character of dental caries; there is slow caries and rapid caries; caries deep in character with small external opening; caries with large external opening and superficial in character; caries hard in consistency and caries soft and without form; caries that is painful and that which lacks sensibility; caries with color and caries without color. These qualities combined give character to dental caries and the absence or presence of one or more of them is what produces variety and modifications in the character of the process of dental caries.

#### DISCUSSION ON DR. JUNGGERMAN'S PAPER.

*Dr. J. R. Callahan*, Cincinnati. I would like to ask Dr. Junkerman a question. He referred to the fungi, saying that he assumed that those present were all alike instead of saying they were alike.

*Dr. G. S. Junkerman*:—I said I assumed they were all alike, for we do not know sufficient at present to distinguish between the various fungi and the degree or kind of caries that arises from them; that will have to be discovered by further investigation. We know more about the acids than we do about the fungi and their action.

*Dr. Geo. H. Wilson*, Painesville. There was one remark made by the essayist that seems to me a little broad and one which we might take exception to if I understood him correctly, and that is, cavities having a small opening would be of slow decay. It seems in practice we see the most rapid form of decay in that condition in which, the dentine is destroyed more

rapidly than the enamel, consequently we have rapid decay on the inside, just a mere shell of the tooth. When we break into such a cavity we may have a bad case on hand. I was very much pleased with the paper, but I think we sometimes make statements that are a little broad.

*Dr. C. M. Wright:*—I have very little to say. I was pleased with the manner of presentation of the paper and its conciseness, and consider it a valuable one for our archives. I was somewhat amused at the beginning of the paper by the statement of the gentleman that there is no dispute in the dental profession as regards the etiology of dental caries. If he had been in the room last night and heard the discussion between Professors Taft and Smith he might have changed his paper somewhat. I have no bones to pick in regard to the paper, nor is there any thing that I can quarrel with, consequently I am out of my element.

*Dr. H. A. Smith:*—I regret I was not present when the paper was read. I missed it, therefore I can not discuss it, except the point raised a moment ago by a gentleman in reference to why we had in some conditions of caries quite a spreading variety, and the other varieties had penetrated directly in the shortest direction towards the pulp. If the dentine is of uniform density, if it is perfectly alike throughout the entire structure, it is difficult to explain why caries assumes this form, while in other cases it is directly in a straight line or in the direction towards the pulp. May we not assume that when we have spreading caries the dentine is not homogeneous; that we have defective territories or inter-zonal spaces, as they are called. When the active cause reaches that defective territory it has modified or changed the direction of the progress of the disease. Would that be an explanation of all these cases? We find a variety of caries spreading under the enamel, the inter-zonal space, which is more susceptible, more predisposed to caries than dentine proper in the body of a tooth. I would like to have the gentleman refer to these anomalies, to give us his explanation of them since they are not clear in my own mind.

At a recent meeting of the Pathological Society, Dr. Leonard Guthrie showed a toad whose death had been caused by Larvæ of Blow Flies having attacked its mouth and nostrils. The nostrils formed one large cavity, separated only by a thin septum of skin anteriorly; both eyes were collapsed, and their empty tunics lay in the cavity of the mouth, whilst the whole of the soft palate had been devoured by the larvæ, leaving the bones picked bare. Between three and four dozen larvæ were removed after the death of the toad. It was well known that toads and frogs were subject to such ravages, but until the present time no attempt to identify the larvæ had been successful. Dr. T. S. Cobbold had referred to the subject in the *Veterinarian* for 1880, but had been unable to name the maggots. Professor Brauer, of Vienna, had kindly examined the larvæ now exhibited, and had pronounced them to be of the genus "Calliphoræ." The species was indeterminate, but was probably *Erythrocephala magna* or *Vomitina*. It was difficult to explain why the mouth and nostrils of batrachians were always the sole parts attacked. It was obviously impossible for the fly to lay its eggs directly in the toad's nostrils, and the probable explanation was that the eggs were laid in the toad's mouth, whilst a pregnant fly was being swallowed. It was stated that the number of toads had been greatly reduced by similar attacks of such larvæ.

In the discussion—Dr. Beaven Rake said that in tropical countries maggots in the nose and in the external auditory meatus were very common, especially in lepers, and also in persons in very different stations in life. He mentioned the case of a man who was stung by a fly, and later a large larva was expressed from a swelling which had formed at the spot.—(*British Journal of Dental Science*).

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### Lysol.

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Lysol, the new disinfectant and antiseptic, is recommended as promptly arresting the development of micro-organisms. Cramor, Wehmer, Michelsen, and others have successfully employed it in surgery and gynaecology, and Hanel says it is an unusually

agreeable agent for the operator. Unna has used it as a plaster mull in various skin affections, and Phillips has tried it with some success in lupus. It has also been advised in rhinopharyngeal and laryngeal disease, as well as in diseases of the middle and external ear. It is obtained by dissolving the fraction of tar oil, which boils between  $190^{\circ}$  and  $200^{\circ}$  C., in fat, and subsequently saponifying with alcohol. It is a clear, brown, oily liquid, and contains 50 per cent. of cresols. It can be mixed readily with water, and forms clear solutions with glycerine, alcohol, chloroform, and various other fluids. Furbinger recommends  $\frac{1}{2}$  to 1 per cent. solution for the hands, and  $\frac{1}{4}$  per cent. for instruments. It is only  $\frac{1}{8}$  as poisonous as carbolic acid, and cheaper. Pee recommends a 1 per cent. solution in midwifery and gynæcology, and says that a 1 to 200 solution destroys streptococci in fifteen minutes. His experience with it has been very favorable.—*N. Y. Med. Record.*

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### Impurities in Commercial Samples of Peroxide of Hydrogen.

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In the *Medical News* of January 30, Dr. Samuel S. Wallian, of New York, demonstrates conclusively that the various samples of this agent, now in the market, vary greatly in their purity and efficiency. Of five samples one gave a strength of eight and one-quarter volumes, another of thirteen and a half volumes, a third of seventeen volumes, a fourth of one and one-half volumes and a fifth of twelve volumes. Some were distinctly acid in reaction and showed a considerable liberation of gas, in the force with which the cork of the bottle was ejected. The writer insists that samples should be entirely neutral in reaction, should not readily deteriorate, and should have the strength claimed for them. Only one of the samples tested answered these requirements.

A remedy which is so generally used as this, and in which purity is so important, should be known to be reliable, and we have for this reason called the attention of our readers to it.

### Bibliographical—A New Journal.

*The Bacteriological World and Modern Medicine*—Bulletin of the Laboratory of Hygiene Sanitarium, edited by Paul Paquin, M.D., D.V.S.

The first number of the first volume of this journal is very presentable indeed; it is to be devoted, as we understand it, to the development, both theoretical and practical, of the subject of bacteriology as well as modern medicine.

This, however, is the successor of a journal that was published during 1890. One of the editors, Dr. J. H. Kellogg, in speaking of the purpose of this journal, says: "Probably nothing has contributed more to the advancement of medical science in the last quarter of a century than the growing tendency to specialism, and the development of various specialties in medical practice. The rapid accumulation of important and even revolutionary facts in the various departments of medical knowledge, especially within the last twenty-five years, has made it impossible for any one mind to grasp the whole of medical science, and has rendered it necessary that one who would become in the highest degree proficient as a surgeon or medical practitioner should devote himself to one particular line of study and research as the only means of attaining the desired end. While it may be conceded that the tendency to specialism has been carried somewhat too far, the great advantages which have resulted from the labors of the specialist must be regarded as one of the most important elements of progress in modern medicine. \* \*

"It will be the aim of the editors of this journal to make the pages an epitome of the fullest and most advanced thought and the ripest experience upon all subjects which come within its scope. *The Bacteriological World and Modern Medicine* is not designed for a special class."

The known ability of the editors of this journal is a sufficient guarantee that the purpose they have outlined will be carried out to the fullest, which will make this journal one of inestimable value to men in all departments and specialties of medical science and practice.

## Bibliographical.

DENTAL MEDICINE.—A Manual of Dental Materia Medica and Therapeutics, by Ferdinand J. S. Gorgas, A.M., M.D., D.D.S., editor of "Harris' Principles and Practice of Dentistry" and "Harris' Dictionary of Medical Terminology and Dental Surgery," Professor of the Principles of Dental Science, Dental Surgery, etc., in the University of Maryland, Baltimore. Fourth edition, revised and enlarged. Published by P. Blackiston, Son & Co., No. 1012 Walnut st., Philadelphia, Pa.

"In presenting a fourth edition of the 'Dental Medicine' to the dental profession the author desires to express his grateful appreciation for the favors with which each of the preceding editions has been received, and the kind notices they have elicited."

The enlargement of this fourth edition has been necessary in order to bring the work up to the present status of dental materia medica and therapeutics. Considerable matter has been added to diagnosis of the mouth, the different remedial agents, the various substances classed as dental materia medica with their medicinal properties, action, dental use and mode of application, among the number arsenious acid, carbolic acid, aromatic sulphuric acid, tannic acid, chloroform, nitrous oxide, chloral, antipyrine, antifebrin, bichloride of mercury, peroxide of hydrogen, creolin, chloride of methyl, sulphonal, etc., etc.

A new chapter has been added on the use of antiseptics in dental practice which includes the sterilization of dental and surgical instruments, also a list of new antiseptics, disinfectants, germicides, and hypnotics, etc., together with a number of new and valuable formulæ.

Lengthy notice has already been made of a former edition of this book, so that little remains to be said except that this present edition is a revision and enlargement of the third. The name of the author of this work, so well known to every dental student throughout the country, and the necessity for the issue of a fourth edition, combined with a knowledge that every copy of each of the former editions had been disposed of some months

before the subsequent edition was ready for publication, are sufficient guarantee of the value of this book to all interested in the practice and study of dentistry. So much has been added to this fourth edition that a glance at the table of contents and the general index will at once convince them of the value of this work as a text-book and book of reference. It is neatly bound in cloth and the type is remarkably clear. Every dental student will find it to his interest to obtain a copy.

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### Notice.

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The Post-Graduate Dental Association, of the United States, will hold its annual meeting April 29th and 30th next, at Leiland Hall, Chicago.

Dr. N. C. Barrett, of Buffalo, N. Y.; Drs. T. N. Brophy, Louis Ottafy and others, of Chicago, will present essays and addresses. An interesting programme has been arranged and a good attendance is expected. All members of the profession are invited.

Graduates of recognized Dental Colleges may become members by paying membership fee \$1.00, and dues for one year in advance \$1.00.

L. S. TENNEY, Sec'y.

R. B. TULLER, Pres.

96 State Ave., Chicago.

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### Hymeneal.

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Dr. Edward P. Beadles and Miss Annie Boisseau were married recently in Danville, Virginia, at the residence of the bride's father.

Dr. Beadles is one of the more prominent dentists of Virginia, and occupies an enviable position not only in his profession but in society as well. Dr. and Mrs. Beadles will have the congratulations and the best wishes of his host of friends in the profession, and we are sure that the new relationship thus formed will be a happy one, and that Dr. Beadles will more than ever stand as one of the representative men of his chosen profession.

## EDITORIAL.

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### **The Mississippi Valley Dental Association.**

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The forty-eighth annual meeting of this society will be held in Cincinnati, March 8th to the 11th. The Executive Committee is making special effort for an unusually good meeting, and, without doubt, their effort will be crowned with success.

This society, though encroached upon somewhat by other societies, is always an attractive meeting, especially for all the older members. It is interesting not only because of what it accomplishes from year to year, but because of its history. It was organized when dentistry could hardly be regarded as a profession, or at least, when it was in a very elementary condition; but two or three dental societies were in existence in the world at that time, and they have ceased to exist. This society has not only lived through this long period, but it has been one of the active agencies in the unfolding and development of many things that are now important elements in the constitution of our profession. With its early history many of the leading members of the profession were identified, and made their impress upon its work; the results of which remain to the present. Many prominent teachers, writers and workers have been members of this society and received much of their training within it.

The executive committee, who are distributed throughout the various neighboring States, are at work in the preparation of a programme, and the coming meeting will doubtless be one of the most interesting that has been held for years. Here little or no time is spent in routine work but the time is almost wholly devoted by papers and discussions upon scientific and professional subjects.

We trust there will be a large attendance, and that all the members will come with full intent to add something to the interest and importance of the occasion.

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### **A New Disc Mandrel.**

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One of the most complete disc carriers that we have seen has just been devised by Dr. E. C. Moore, of Detroit, Mich. It consists of a screw about one-fourth of an inch in length, with a grooved head upon one end; a screw collar is made that is tapped to run upon the screw, this collar having a flange the same size as the head of the screw. For mounting the disc of paper, or any other material, the screw is passed through it, the collar is put upon the screw and drawn up tightly upon the disc; the other part of the appliance consists of a screw socket shaft that runs into the engine, and the disc, as described, is simply screwed into this socket shaft, when it is ready for use. One or two socket shafts is enough for any number of the mounted discs, as they are put on or taken off in a moment's time by a turn of the screw either backward or forward, as the case may be.

This is one of the cheapest and most efficient appliances for this purpose we have seen. This appliance will very soon be obtainable through the dental depots.

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### **The World's Columbian Dental Congress.**

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A meeting of the Executive Committee of the World's Columbian Dental Meeting (now Dental Congress) was held in Chicago, January 11th and 12th, the object of which was to further provide for that great occasion.

The change of the name from "Meeting" to "Congress" was done by the unanimous vote of the committee at the suggestion of the President of the World's Congress Auxiliary. This he did in order that the name of the dental meeting might be harmonious with that of several other congresses to be held during the time of the World's Fair. The work of the committee consists largely in filling out a number of committees that had already been designated and defining, so far as practicable, the work of these respective committees. Three or four new committees were also designated and appointments made for them.

The time for the meeting of the Dental Congress was fixed for August 17th to 27th, 1893; a change, it will be observed, in this respect from the time formerly suggested.

Ample room and accommodation for all the work connected with this meeting will be provided by the authorities in the Art Palace, the main room of which will accommodate about thirty-five hundred; there will be a large number of smaller rooms for clinics, committees, sections, etc. Several of the committees have been vigorously at work for a number of months past; nearly all will from this time on be actively engaged in their special work.

There was in this meeting of the executive committee, in every thing done by them the utmost harmony, and an evident determination on the part of every one to do every thing possible for the highest success of this great meeting, and in the profession throughout the country there is an enthusiasm in reference to this matter that could hardly have been anticipated by anyone.

We hoped to have had for publication in the present number a full minute of the proceedings of this meeting of the committee, but it is not yet at hand, and must be deferred till the next number.

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TO OBTAIN PURE OXYGEN RAPIDLY.—Zinno's method consists in mixing intimately 200 gm. of powdered potassium permanganate with an equal weight of barium binocide. On the addition of water oxygen is disengaged. With the amount stated, at ordinary temperature, 13,620 cc. of pure oxygen are generated. The oxygen is rapidly produced, and is not contaminated by chlorine, or chlorine products.—*Med. and Surg. Rept.*

# THE DENTAL REGISTER.

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## COMMUNICATIONS.

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### Combination Fillings.

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BY J. R. CALLAHAN, D.D.S., CINCINNATI, O.

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Read before the Ohio State Dental Society, held at Columbus, O., December, 1891.

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For sometime I have been deeply impressed by the seeming tendency, shown by many of the leading lights of our profession, to the utter abandonment of things practical for things scientific, so-called. For a time the energies and best thoughts of these men were directed toward the practical things in hand, and *at the same time* they did not fail to recognize the scientific; and while working under these conditions they pushed American dentistry to the front and compelled other nations to acknowledge their superiority. As an indication of the tendency of the times, I read in one of our journals not long ago an article congratulating the profession at large upon the fact, that at a recent dental society meeting, that not a practical paper or discussion was heard; that the whole time had been devoted exclusively to scientific subjects. To all of which I say, Amen, if kept within proper bounds. There is in my mind no doubt as to the propriety of devoting the whole of the time, of such societies as the American Dental Association, to scientific discussions and demonstrations. But our State societies should, in my opinion, divide the time somewhat and discuss and *demonstrate* the things of every day practice. Our hyper-scientific men, especially those who ape European practice, seem to have forgotten that there is any necessity for doing practical things thoroughly and up to the highest standard. They seem to forget that their *principal* mission is to save teeth, at least a look into the mouths of

their patients would lead a conscientious operator to think so; for this reason, be it real or imaginary, when your committee called on me for a paper I concluded to direct your attention, *in a very general way*, to combination fillings.

Human opinions and methods seem to swing as a pendulum, from one extreme to the other, until, after a lapse of time we are compelled by results to seek the middle ground where we may look upon all sides of the problem in hand, thereby be enabled to recognize that which is good and discard that which is bad. Many of you can remember when fillings were all plastic or non-cohesive. All of us can remember when cohesive fillings were the rage. To-day the man who confines his practice to either extreme may be said to be a one-sided dentist. We seem to have found the middle ground in this department, and are doing our patients and our profession better service than ever before.

For our purpose to-day combination fillings will mean a combination of amalgam and gold, tin and gold, and of cohesive gold and non-cohesive gold.

It is well known to all present that the rapidly increasing weakness of the enamel borders as we approach the cervical line, calls, and calls loudly for an indestructible filling material that will spread under gentle pressure and make a perfect joint and that will not change its form during years of service. Another requirement also, is that the material must be of such nature that it can be put in place with the least possible expenditure of time consistent with perfect results.

For the sake of brevity we desire to direct your attention-entirely to the filling of compound cavities as we find them in bicuspid and molar teeth, with the understanding that the grinding surfaces of these fillings are to be made of cohesive gold only. I do not need to describe the preparation of the cavities to you further than to say, the borders should be cut away till we have as strong and even walls as possible, with a very slight groove cut along the lingual and buccal walls and the base of the cavity, or in other words, the cervical wall should be made square as the case will permit, without making sharp angles, thereby giving the filling a firm foundation to rest upon. We should get the

chief anchorage at or near the grinding surface, in most cases in the fissures.

It is absolutely necessary with this kind of filling to use some form of matrix, whatever kind best suits the operator. In my opinion the matrix should be so adjusted that it will give a little, so that the filling may overlap the borders slightly. Now we proceed to fill as our judgment may direct, first with amalgam filling one or two-thirds of the approximal portion of the cavity with whatever may be your favorite brand of amalgam, then laying on the crystalloid gold prepared for this purpose, till all the mercury disappears and we have the clean gold surface. When the remainder of the cavity is filled with cohesive gold, this makes a very good filling. Under these conditions amalgam is seen to the best advantage. I have seen fillings of this combination doing excellent service for years, the amalgam shrinking much less, therefore, being far more reliable than when used alone.

If it is desired to use pure tin in the approximal portion of the cavity, we have the choice of two forms of tin, viz: tin foil and Robinson's Fibrous Filling Material. The latter being so far the superior of the former we take the liberty of passing the foil by without further notice.

With the Robinson material the mallet must be used and used very thoroughly, with it you can go to almost any extreme in contouring. It will spread somewhat under the plugger, soon turns dark but does not discolor the tooth substance, and if thoroughly condensed and properly finished, will keep a tooth free from decay, under unfavorable circumstances, longer than any single metal used for that purpose, provided it be protected from friction such as the grinding surfaces are exposed to. By way of experiment to test the strength of this material I have here to show you a very large crown restoration, built up of Robinson's material and then a layer of gold foil tacked over the exterior surfaces giving it the appearance of a solid gold filling. I have similar fillings in the mouths of a few patients simply to see how they will stand the wear and tear. They have been in use now nearly ten years and when last examined, about a year ago, they

were practically as perfect as the day they were put in. The filling to which I have given the preference for several years is composed of equal parts of tin and gold for approximal surfaces and finished with heavy cohesive gold. The material is prepared by laying a sheet of Abbey's No. 4 non-cohesive gold foil on a sheet of No. 4 tin, and folding once, with the tin on the outside; then cut in strips from  $\frac{1}{8}$  to  $\frac{1}{4}$  inch in width; then introducing the material by hand pressure, using rather coarse and sharp serrations, once in a while bringing the mallets into use to make sure the filling is solid as possible. I have been told by dental friends that this sort of filling would disintegrate and finally wash out from under the gold, and I must confess that for a time I was quite uneasy about the large number of these fillings I had put in, but after several years of close observation I find if there is any disintegration it has been where the filling had not been made solid when put in. After the tin and gold has been in the tooth a short time a change begins to take place in the filling material. What it is I do not pretend to say, only that the material gets quite hard, as hard as amalgam. It can be separated from the gold only by cutting. There is no change of form whatever that I have been able to discover. As to strength it is perfectly safe to restore any ordinary contour. I have here an extreme case to show you that was built entirely by hand pressure, using the mallet only on the grinding surface. For a long time I have used this material for filling cavities on grinding surfaces of molars and bicuspid for children, they do so well and show so little wear that I am tempted to use them for adults also.

I have tried many times to use non-cohesive gold in these approximal surfaces in this manner without achieving what I felt to be a success, the gold always showing a disposition to harden and get lumpy under pressure and scale in finishing. Recently my attention was called to the Wolrab pellets; have been giving them a pretty thorough trial for about a year and so far as I can see now they fill the bill admirably. It spreads under the instrument, either hand or mallet, and does not show that harsh and brittle form so characteristic of other gold. I do not think

it will make as safe a contour as Robinson's material, nor will it work quite so fast as other materials mentioned; but where cavities are exposed to view and the preparations of tin are barred out on account of color, you will find these pellets will make a quick and very reliable filling under a few layers of No. 60 cohesive foil. I have avoided some details that I consider to be of some importance for the reason that I expect to put in one or more of these fillings in your presence during this meeting.

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DISCUSSION ON DR. CALLAHAN'S PAPER.

*Dr. C. M. Wright*:—I think the paper read by Dr. Callahan is a good one of its kind. I will not say any thing about the kind. He started in with a criticism of a society of dentists who had nothing but scientific papers presented. Once upon a time there was a lot of griddle-makers in the country who devoted themselves to the mechanical operation of making griddles for the people. The principle thing was to make good griddles so that the people might make cakes in the morning. But the griddle-makers got to studying the qualities of the material used in the cakes; they studied also the subject of nutrition and general biology, and little by little, instead of discussing the best methods of making griddles when they met in griddle-makers' convention, they talked about the health of the people who ate the griddle cakes, until after a while they established a school, and were recognized as a profession. By and by a wicked man by the name of Callahan came along, not caring about the health of the people, nor the kind of cakes eaten, nor the questions of physiology, and said, "Let us confine ourselves to the manufacture of fine griddles, this is practical." This is Dr. Callahan's position in our society to-day.

*Dr. Callahan*:—The remarks of Dr. Wright are to the point, as they usually are. So far as devotion of time to scientific discussion and work is concerned, I do not think there is any man who spends more time from this standpoint than I do. In my opinion the scientific work should be better, and the class of practice I have reference to many of you are familiar with. Many of you see the work of men who occupy prominent posi-

tions in our profession who can do better work than they do, but they send their patients away as if they thought it was not necessary to put in a good filling. We should pay a little more attention to this line. When I read the paper I had in mind two or three men in New York City, one the president of a dental college there, whose work his patients are not satisfied with. Much better work could be done than is done if proper care were taken to do it.

*Dr. H. A. Smith:*—This is too important a subject to let go without further discussion. Dr. Callahan has gone into the subject forcibly and presented his reasons why combination fillings should be often made.\* He did not refer perhaps to the economic side of the subject. There are several reasons why these fillings might be made from that standpoint. Should we estimate the cost of material? Some one asked not long ago the relative cost between the cheaper materials and gold? Taking the silver dollar as a basis, it was stated "the relative cost would be about as one to thirty." From that standpoint perhaps we ought not to insert them. If there is to be any advantage, however, in this direction it should be largely on the side of the dentist. If a filling of one form of gold, say soft gold, could be introduced into a cavity and regarded as a thorough filling, it is just as good as a combination filling and, therefore, I think, a combination of materials is sometimes resorted to, as Dr. Callahan has intimated, because the operator does not exercise or possess the requisite skill to make good gold fillings. Permit me to call attention to a combination of the metals and oxy-phosphate. I have in my hand a combination filling composed of one-half in bulk of what is called Leslie's crystalline gold and oxy-phosphate. These fillings I have inserted occasionally, but can not give any thing definite in reference to their durability. The filling presents a dense surface; it has the advantage of edge and strength, and for these reasons it might be preferred. Whether it is dissolved as rapidly as a phosphate filling I do not know. It seems to me we would not have a solution of the surface as readily. The gold can be burnished over the surface and this would be a protection to prevent the

beginning of the solvent action. This may not be new to you. We have had our attention frequently called to combination fillings in which the metals are associated with oxy-phosphate. I have here specimens, fillings made of oxy-phosphate and alloy, such as are used in amalgam fillings. They are objectionable in that they discolor. They have two qualities, however, in their favor, density and edge-strength qualities, which we do not have in oxy-phosphate fillings. I tried the experiment the other day of introducing an oxy-phosphate filling and placing immediately upon the surface a mat of spoige gold; it seemed to adhere. After hardening the gold was condensed upon the surface and we had a phosphate filling with a gold surface. If the cavity is accessible and the manipulation done rapidly this might be accomplished.

*Dr. C. P. Dennis*, Portsmouth. This subject is too important to permit it to go by without some discussion as it is one that we have to deal with in our daily practice. I will undertake to say that it is much like our religious duties, there is so much difference between the profession and our conduct in the matter. It is a very important matter also, because the durability of our operations in the mouth depend so largely upon the condition of the mouth and teeth, and the care that is taken of them. I try to impress upon every patient who comes into my office the necessity of caring for the teeth, and when I have not got time to talk about it I give them printed directions. It seems to me we can not expect operations to be lasting unless the mouth and teeth are kept in a healthy condition. In the press of business of attending to our patients we forget these thing, and as I have before said, I keep slips containing directions near by me so I can hand them to patients as I discharge them. *Dr. Taft* has covered the ground so thoroughly that there is very little left to be said. I commend the paper because it tells us to do our duty rather than what our duty is.

*Dr. W. H. Whitslar*, Cleveland. There was a discussion at a previous session of the society on the care of the teeth during pregnancy and lactation and it strikes me that this subject would have come under that head very nicely. The means

of proper food, the proper filling of teeth and care of the mental state were touched upon in that discussion but nothing, to my knowledge, was said in regard to the teeth from a hygienic standpoint. It has been my experience that women during the period of pregnancy and lactation have so much to do in taking care of children that their minds are constantly occupied in that direction, consequently they neglect their teeth. If they had taken care of them, provided they were of good structure, they would not have decayed. We must not at all times say that teeth decay because they lose their lime salts, or because they are not properly filled. Care of the teeth during pregnancy and lactation by the proper means, the use of the brush, etc., will prevent them from decaying in a great many instances.

*Dr. J. Taft:*—It strikes me that this is a matter of importance both to the dentist himself and the profession, because the greater efficiency he can secure in that which he does for his patients in the way of arrest of decay of the teeth the better will he be held in the estimation of those whom he serves. It is his duty from the standpoint of self-preservation so far as professional reputation is concerned and it is his duty to give such directions as will secure the most perfect results in this respect. There are various conditions in life; there is a lack of care on the part of people in regard to their teeth. Sometimes there may have been much work done in the mouth of the patient, and he has received no instruction about their care, and by and by he or she becomes negligent and an accumulation of debris is made upon the teeth and remains for an indefinite period of time; indeed all of you have seen cases of the first, second and third molar where there has been an accumulation of material upon the surface undergoing decomposition, and you can almost predict in many instances that beneath this accumulation there is a disintegration of tooth substance. If a filling has been put into that surface of the tooth you will almost instinctively come to the conclusion that the condition is faulty, and I suspect about that filling there is decay. In a great many instances it will be found that disintegration takes place there. Now then, it is important for the dentist from a professional

standpoint, that he should pursue that course in the way of impressing upon the minds of his patients the necessity for care in this respect for the preservation of their teeth.

Another point. Every one who is a regular patient should have his or her mouth examined at certain intervals every six months on an average. Some patients ought to have their teeth examined every three months. The dentist should see that the patient is careful in this matter, if possible, and not allow him or her to lapse into careless habits; he should see that they are masticating their food well and that there are no extensive breaches made in the teeth. Other patients will go along six months without an examination of their teeth being necessary, and still others nine months, and you feel satisfied to let them go that long, knowing that they are careful in their habits. Another patient of different habits will have large decay made within a year's time. The character of the teeth, their susceptibility to disease, modify the circumstances relative to the frequency with which the teeth should be examined. The dentist who examines the teeth of regular patients should see that every filling is in good condition all the while. Fillings should be gone over and kept in good condition, for there is no reason in the world why fillings may not be impaired by use in three or four years, by abrasion or roughness produced in various ways. When we get a hole in our boot we have it repaired; when we get a hole in our coat we have it mended, but teeth oftentimes go along without being touched. Teeth should be examined in this respect, and we should insist upon those who hold us responsible for their teeth that these examinations shall be made. A patient holds you responsible for what you have done.

We hear it said sometimes "Dr. So-and-So filled my teeth and they are all going to pieces." Insist upon seeing the cases frequently and do whatever is necessary to maintain a perfect condition of the mouth. That is due to the dentist. As he builds up his reputation, so he is established in the community; it is a duty we owe both to ourselves and patients.

## Erosion.

BY. W. S. ELLIOT, M.D., D.D.S., M.D.S., NEW YORK.

Read before the Ohio Dental Society, held at Columbus, December, 1891.

Papers and discussions upon this subject have as yet presented but little towards a satisfactory explanation of the phenomena. References thereto seem too much of a generalization and though it is conceded by most that the affection is of a chemical nature, yet in the concessions no chemical reactions are given, consequently our insight remains dim and knowledge is not increased.

I propose to draw no conclusions other than what might reasonably be deduced from the premises noted.

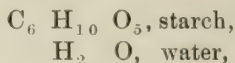
I offer this paper only as a study, and if not convincing, it may lead the scientist to work out more complete demonstrations.

The glandular apparatus of the mouth is part of the general digestive system whereby foods are reduced to the requirements of nutrition.

If we cannot know the ultimate features of the digestive act, we can know something of the process and the successive steps towards its consummation.

In the saliva we recognize a peculiar substance known as ptyaline, a nitrogenous principal coincident with the properties of living matter. To it is ascribed the function and power of transforming starch and cane-sugar and other glucosides into glucose or grape-sugar. Starch is a definite chemical compound represented by  $C_6 H_{10} O_5$ .

Through analysis we find that such change is one of hydration, viz: the absorption of a molecule of water, resulting in a body having new and distinctive physical properties and capabilities, known as glucose or grape-sugar. The reaction is here shown:



and we further find that under the influence of progressive, or perhaps perverted energy, this molecular mass is split into two corresponding parts, and with this division is presented still other properties which fall under the nomenclature of lactic acid :  $2C_3H_6O_3$ .

It is to be accepted that the energy which disposes to this transformation resides in the substance of the ptyaline. The change would seem to lie strictly within the range of chemism, but it is impossible to define this limitation. We know nothing of the ultimate features of the vital force and but little of its componentry ; still, its power is noted and also the blending of the forces in the final results. We therefore style these changes a chemico-vital act.

An elaborate analysis of the ptyaline discloses certain pyoid bodies having a likeness to embryonal corpuscles or to leucocytes, and possess like them amœboid movements. These are known as Leeuwenhock's globules. According to Rouget the more numerous are these bodies the more augmented is the production of sugar in the saliva. This has appeared especially so in cases of mercurial salivation. This fact will prove suggestive to us in these investigations. If we now go back to the consideration of the antecedents of perverted salivation we will find excessive metamorphosis of the glandular elements through impressions of the nervous system from causes still more remote, and perhaps undefinable ; but which, could we comprehend all, would lead us by successive steps to a positive understanding of the subject under consideration.

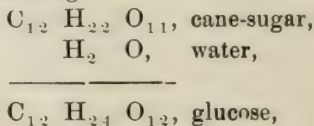
In the study, then, of erosion, we shall take cognizance of these known physiological and pathological conditions and inferentially, at least, deduce reasons for the existence of the affection.

It is well known that the direct application of grape-sugar, as of rasins, honey, etc., to the teeth frequently causes quite sharp pains, indicative of neural disturbance and enhanced sentience ; and it is also a known fact that the persistent contact will cause the enamel to be pitted and its integrity more or less destroyed. While the molecular disintegration is thus apparent

we follow in our desires to comprehend its chemical aspects as well.

Having observed the reduction of starch to grape-sugar, then to lactic acid through a chemico-vital process of hydration, we reach the phase of the subject to which assent is generally given, namely: that the immediate cause of erosion is that of an acid saliva. But this statement is only a half truth in that the estimate is made as being altogether within the limits of chemical force. The acid condition is, as has been shown, an elaboration of vital as well as chemical influence, and as such is possessed of properties in which both qualifications are combined. A parallelism is that of stomachal digestion. Lactic and hydrochloric acids are here the products of the deliquium of the peptic glands associated with peptones in their career of chylication. Chemism, then, is not the only agency in the reduction and of course will not be so considered. Further, it has been the tendency to refer this acidity to the muciparous glands, but I think this reference is erroneous since the saliva is a complete production, and to it, as a whole, do we ascribe its functional capabilities. It is true that erosion is noticed more particularly upon the teeth in the immediate neighborhood of these glands, but there are special anatomical reasons why this should be so. Upon the incisors there is the additional agency of friction of the lips, and upon the molars that of the cheeks; and along the cervical aspect of the teeth where erosion is evident, there is retention of the saliva owing to the pocket-like character of the environment. These mechanical movements of the muscles are analogous to the churning movements of the stomach which assist in the liquification of the substances acted upon.

The reactions of cane-sugar are similar in kind to that of starch or glucose, though the disturbance may perhaps be less in degree. The change follows the same law of hydration, which is shown by the following:



or  $2C_6H_{12}O_6$ , glucose and levulose,  
and  $2C_3H_6O_3$ , lactic acid

So far, then we note the same results, but now for the action of the products of hydration upon the teeth. You will notice that the trend of my argument is away from the chemism as such, but including it in the general results. If, as before stated, there is perversion of the glandular secretions and an increase of Leeuwenhock's corpuscles with augmented production of glucose and acid, then we must realize a proportional enhancement of tooth waste; and if we estimate this waste as a strictly chemical one we must consider what are the elements concerned in the reduction. On the one hand is the acid, on the other the calcific constituents of the tooth. In this interchange the principal product can be none other than the lactate of lime. But when we estimate it from a chemico-vital standpoint we may deem the waste as more of a process of digestion, involving the necessary presence of the ferment, to which we have alluded, with the probable evolution of various complex bodies which remain undefinable.

In the empirical treatment of the affection preference is given to the use of chalk or calcium-carbonate, locally applied. Science indicates this as rational, since the selective energy is divested from the teeth to the free medicament where the affinities are fully satisfied. But this procedure contemplates only the effects of impaired function, erosion being a symptom only. An understanding of antecedent conditions becomes a necessary inquiry, and if full appreciation is given to the proportion herein stated, we must look to systemic agencies as influencing the pathogenic elaboration of the glandular products. But here comes bewilderment since the field is so broadened that direct statement seems impossible. I am not prepared, therefore, to give indications that would serve as a guide to a rational diagnosis. Prof. Peirce recognizes a gouty diathesis as coincident with the affection. My own observations have not confirmed this, nor indeed can I express any convictions that are positive or seemingly at all tangible.

In referring to statements made by Dr. W. H. Trueman, it

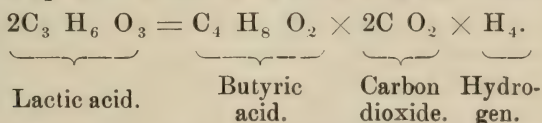
appears that he advocates the chemico-vital theory. He says: "Solution is not necessarily a chemical process. The idea that this destructive agent must be an acid having an affinity with the lime salts of the tooth has little but tradition to support it. The little cap which we frequently see, mainly of enamel, all that remains of a baby molar, is sufficient evidence that there may be, and is formed in the oral cavity a true solvent of tooth tissue. I know this effect has been produced by a normal physiological process." He further suggests the idea of stomachic digestion as parallel to erosion, and excludes chemism as being only a minor agent. Prof. James Truman says, in contradiction to this view: "Erosion and abrasion are extremely simple—governed by a law of chemical action"; and further, that "erosion is the result unquestionably of chemical solution." These opposing statements do not help us in our investigations. With the clinical facts before us, and a recognition of the main features of oral function we are led to such conclusions as the inferences would naturally point.

It is suspected that a distinction is made between the process of absorption of the roots of the deciduous teeth and erosion of the permanent ones, in that one is considered a digestive process and the other an exclusively chemical one. It is not, however, so stated. Dr. Trueman believes that there is formed in the mouth a true solvent of tooth tissue. He makes no reference to the exfoliation of the infant teeth, but only and always to erosion, which Prof. Truman denominates, as before stated, a purely chemical act. In this review the conviction is towards the oneness of the seemingly varied causes for the solution of the tooth tissue. In each instance the same energies are working towards the same results; generally within the bounds of physiological requirement and sometimes upon the side of destruction and death. We would anticipate objections to the views here enunciated, and answer, that the reason why there is not more extended evidence of erosion when the career of the glandular elements is so definitely pronounced, is that the normal limitation is that of the production of glucose, which is the only condition capable of assimilation. If starch, cane-sugar, and other gluco-

sides are not thus reduced they do not feed the tissues and are not capable of proper alimentation. It is the excessive transformation, under the more remote systemic influences, of the glucose to acid that constitutes the abnormality. A minor degree of acidity may not be incompatible with proper functioning. Indeed, it is possible that it is beneficial, as it appears to be stomachial digestion.

The solution of the roots of the deciduous teeth does not depend more upon the formation in the mouth of a true tooth solvent, than upon the digestive properties of the globular elements of the sulci, for these are endowed with the same properties as are the products of the salivary glands. All animal tissues—the blood, muscles and mucous membranes in general possess the property to a limited degree.

If undue acidity and erosion are dependent upon antecedent conditions, then the immunity therefrom is in proportion to the infrequency of the first cause, and if a gouty diathesis is coincident with the affection, the absence of erosion is accounted for by the rare occurrence of the predisposing conditions. Should we follow out to a further limit the process of fermentation in the mouth, it will be observed that lactic acid and calcium lactate are also prone to decomposition. Foul and ill conditioned mouths that arise from total absence of hygienic care testify to this continued transformation towards an extreme degree of putrefaction. The break up of the molecule of lactic acid is formulated thus:



The active agency here is a specialized organism described by bacteriologists as of the order of vibriones; but indeed in all these various modifications of the oral secretions there are ferments equally varied in their nature and order as are the products.

But let me modify my first issue; that in the study of erosion superficiality of attention has been given to the subject, I can claim no more, since there is so much that is unknown and

perhaps unknowable, that that which is attained is meager enough, and if the really known transcends my feeble elucidation I will await the promulgations of the more erudite with impatient interest.

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#### DISCUSSION.

*Dr. H. A. Smith.*—I saw a case of erosion the other day which was of special interest to me, and I will therefore briefly describe it. A patient presented himself at the clinic who had what I termed an erosion of the central incisors upon the labial faces a few lines below the termination of the enamel. One was a devitalized tooth, the other was normal; both were attacked by erosion precisely alike. There are two or three theories which have been advanced explanatory of this condition. One is that we have interstitial waste or a diminution (what we have been talking about to-day) of the nutrition of a tooth, and in consequence we have a breaking down or wasting away of the hard tissue upon the surface of the teeth. The case I have described disproves this theory. Erosion was still active upon a devitalized tooth. Nutrition being suspended, there could not have been interstitial waste. Another theory advanced is the tissues of the free margin of the gum secrete a fluid which either dissolves or digests the enamel and dentine, producing the characteristic appearance seen in erosion. Surfaces of teeth are frequently eroded quite a distance from the margin of the gum. Why is not the layer of enamel attacked next to the tissue which eliminated the solvent? The etiology of erosion is certainly very obscure. Perhaps the most rational explanation of the cause of erosion of the teeth, is, that the mucous membrane overlying the particular territory affected, secretes an acid which dissolves the lime salts. Whether this is true or not could be easily tested by applying freshly prepared blue litmus paper to the surface of mucous membrane supposed to secrete the acid.

*Dr. W. S. Elliot, New York.*—As regards the cutting edge of these teeth, there is no aberration except that which would be instituted through the epithelium of the upper jaw and face or lower portion of the tooth. But it shows the ordinary appear-

ance of attrition. It is an attrition which is helped along by the same condition of saliva which produces the erosion. It would be impossible to separate the conditions entirely on the labial surface of the incisors of human teeth. We have an erosion with an attrition of the lips, which would produce abrasion as well as erosion. Upon the cervical portion of the tooth we have pockets which will hold the saliva *in situ* until it has produced its erosive effects upon the necks of teeth. That there should be a tooth isolated and giving the appearance of an erosion, it does not seem to me proper that it should be referred to any one particular gland. It is my conviction that the saliva, as a whole, is a complex substance that produces these results, but not by a chemical act, but by the physiological act of digestion, which depends entirely upon the mucous globules or peptones.

Prof. Peirce's statement, that he recognizes a faulty diathesis, is something I cannot appreciate, and in all instances where a gouty diathesis has been apparent in families, in some members of these families different effects have been produced.

I desire to lay stress upon the idea that frequently the crystals or fermentive bodies are probably instrumental in producing erosion. When it comes down to a purely chemical process, I do not believe it exists in the mouth any more than it exists in the human stomach. It is a physiological process rather than a chemical one.

*Dr. H. A. Smith.*—I have nothing special to say further. Dr. Elliot referred to the fact that in the case which I described there was no solvent action. He rather ascribed it to friction of the lower lip. It was of such a character that friction of the lip had no effect. It was eroded in a fine groove. The elevations were distinct on the enamel, so that the lip had no friction with it upon the plain surface. The Doctor's theory, and those we have seen elaborated, are very good as far as they go, but the main difficulty is the circumscribed territory which is affected, and if the saliva is the true cause of this condition, why is it so circumscribed?

## Ichoræmia.

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BY C. R. BUTLER, M.D., D.D.S., CLEVELAND, O.

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Read before the Ohio State Dental Society, held at Columbus, December, 1891.

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The subject of ichoræmia has excited of late the attention of the most careful investigators, so I venture a few thoughts on conditions of the mouth that affect the general system.

It is a common saying there is more or less trouble with the teeth from the cradle to the coffin.

Permit me to remark that dentition, while it is a physiological process, is one of continuous irritation. The family physician has opportunity to observe the effects of hyper dental irritation, and when it is in excess, the skill of the physician, surgeon and dentist is in demand to modify or control it, the same as in any other part of the body, and the case should be treated on general principles.

If it be of a local nature, showing a tense tumefaction of the gum over an erupting tooth, the lancet may be used with good effect, making a crucial cut if it be a molar, notwithstanding authors and practitioners widely differ.

It may be of a more general character and attributable to a faulty development of the osseous structure as a whole. If so tonics will be more efficacious than the lancet.

The weaklings are the ones that tax to the highest skill, and to this class we shall confine the most of our remarks. They come from the humble cottage and palatial home, with miserable structured teeth from first to last.

Of late considerable has been said about the application of the nitrate of silver in powder, of solid crystal to the partial enameled and decaying teeth, deciduous and first permanent molars. The practice is not all new, but the demand for something beyond the ordinary means warrants us in giving it more than an indifferent trial.

Many of these desperate cases only come to the notice of the physician and dentist when the suffering becomes unbearable

from an exposed dying or dead pulp, ulcers in the mouth, and the formation of pus sockets about the teeth that become points for infection of no trivial character.

The sub-maxillary glands are often affected, and the internal carotid and internal maxillary arteries are ready channels for the distribution of septic poison, giving a train of symptoms familiar to us all.

Abscesses associated with the temporary teeth are a serious item, especially if the child be delicate or sickly. The germs of the developing permanent teeth may be destroyed, and necrosis of the maxilla in part result. Opening of the pus pocket or abscess, does not always close the trouble. Thorough washing out with phenol sodique, dilute, or any mild antiseptic, also drainage for a short time may be necessary.

Some might suggest immediate extraction would be demanded; that is not the best practice in many cases; the child needs teeth for mastication as well as the adult.

The etiology of the various lesions of the tooth structure is not definitely settled or demonstrated. And there is no provision yet discovered whereby a defect, disease, or fracture even, may be repaired, as in other bones, and yet they are vital organs.

In and about these diseased teeth septic matter is found, and extreme care should be exercised by the dentist or operator not to poison himself or others with the instruments that he is using daily.

From personal experience I may speak of the pain and prostration following a wound in the index finger of my left hand. In about three days after the inoculation there was great tenderness, with stinging pain in the finger extending up the arm into the back of the head. An abscess formed about the site of the wound that had to be opened. The dressing used was the corrosive sublimate, 1 to 1000; solution, in hot water. The general prostration continued for weeks.

Dr. W. D. Miller cites a case of chronic pyæmia as the result of a wound by a dental instrument where hundreds of abscesses formed in different parts of the body

Cases have come under observation within a few months that

showed symptoms of infection from unclean instruments in extraction.

Whether this infection be microbic or bacillic I am not here to assert or prove, but I am satisfied that poisoning does occur of a serious character.

"Trained nurses" is becoming quite the thing; they should have a clean healthy mouth and teeth, especially those that have the care of young children; also they should appreciate the importance of hygiene of the teeth and mouth if the child is afflicted with a wasting disease or protracted fever.

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### Prophylaxis.

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BY J. TAFT.

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Read before the Ohio State Dental Society, held at Columbus, December, 1891.

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Oral hygiene is a subject which every dentist perhaps imagines he understands quite well. It is a subject, however, that receives but little consideration in the literature of the profession, or in our discussions upon dental questions, and altogether too little in the actual practice of the average dentist. It is because of these facts that I now ask your attention briefly to this subject.

The general failure to recognize the practical phase of this subject, is not because of a corresponding want of knowledge or want of ability to meet the emergencies, but it is due in a large measure to the neglect of the subject in our literature and discussions. There is a very great lack of understanding and appreciation of the importance of this subject by the people generally, and so it is rare indeed to find any one with a mouth with all its parts in a perfect state of health and purity; notwithstanding the fact, that upon the condition of the mouth and teeth, in a large measure, depend the comfort and welfare of the entire organism.

The process of digestion and nutrition, in a large measure, depend upon the insalivation and thorough mastication of the

food. This can only be accomplished when the masticators are in good condition, and this can only be maintained by intelligent care and attention ; and the latter will only be exercised when there is a proper appreciation of the value of these organs.

Perhaps not more than one in twenty, in any ordinary community, succeeds in maintaining the mouth and teeth in a good state of health and purity. This does not occur so much from absolute ignorance as to how it can be accomplished, as from want of appreciation of the importance of the subject ; for it is quite practicable, and within the reach of every one who desires to maintain these organs in the best possible state of health, comfort and usefulness, to secure a very great improvement over the average condition as presented.

And now, are there any others to whom responsibility attaches for this state of affairs ? Can it be said that physicians, who are supposed to be the conservators of the public health, are much more appreciative than the common people ?

Very seldom indeed is it that physicians give instructions, to those in their charge, about the health and preservation of their teeth. The truth is, that usually the chief efforts of the physician are directed to the cure of disease, rather than to its prevention ; notwithstanding, the latter is vastly more important than the former.

May we ask how much care is exercised in respect to this matter, by physicians, each one for himself ?

The want of attention to the subject of both special and general hygiene, on the part of the medical profession, is lamentably prevalent, to it vastly more attention should be given.

What shall be said in regard to the attitude of dentists in regard to oral hygiene ? Are they not relatively as much in fault in this matter, as the general physician ? How seldom is it that dentists are careful to instruct, and sufficiently impress upon the minds of those they may have in charge, the importance, the benefit, and the means of maintaining a good state of health of the mouth and teeth.

Is it not true that in a large proportion of cases, and may we not say a large majority, in which the dentists are called upon

for remedial and restorative treatment, that they wholly overlook prophylaxis? How often is it that the operation of filling teeth is performed in a mouth having much disease, and a large amount of debris and impurities that ought to be in the first place removed.

How often is it that the dentist simply rests satisfied with performing an operation for repair upon a defective tooth or teeth, when the first thing that should receive attention, is a restoration to health and purity of the mouth in all its particulars, and the operations upon decayed teeth for restoration, should follow.

It will readily be conceded that when a patient is placed in charge of a dentist, for the care and preservation of the teeth, it is his bounden duty to do whatever will minister to the best interest of that patient; and this applies not only in respect to restoration, repair and remedy, but also to prevention as well; the proverb, "Prevention is better than cure," applies here with great force.

While it is true that the active and manipulative work of the dentist is, in a large measure, devoted to repair and cure, yet he has, if possible, a greater responsibility and duty in aiding and directing his patient in such a course of health and habit, as shall most certainly ward off and secure him against disease.

Is it not true that patients, many a time, are dismissed from the care of the dentist, with the mouth in such a condition with respect to impurity, that the best work possible upon the teeth in the way of filling, is of but little permanent value? Every patient before being dismissed should receive such instruction, and be so impressed with the importance of the subject, that the habit of attention to the care of the mouth should be thoroughly established, and as persistently followed as that of sleep, or partaking of food. The dentist owes it to himself and his profession, as well as to his patient, to do whatever will lead to the greatest permanency and security of his operations.

No one at this day should be permitted to engage in the practice of dentistry without thorough knowledge and the best appreciation of dental hygiene, and all that pertains to it. Every

dental college should make oral hygiene one of the most important of the branches of its instruction. This subject should be more discussed in dental societies than it has been, and with a special reference to arousing attention in regard to it; this is perhaps more necessary than giving instruction as to methods of procedure; nevertheless, the latter is very important, and more should be written upon the subject.

In looking over the literature of dentistry there is but little found on this subject, a few brief articles, probably not over half a dozen, will be found in our periodical literature bearing directly on this subject, and few if any of these assume to discuss the question to any good degree of thoroughness. There has been enough written to fill volumes on "The Management of Pulpless Teeth"; "Abscessed Teeth"; "Supplying Artificial Substitutes," etc.; while the subject of oral hygiene has received but a word or a thought at long intervals. Our textual literature is well nigh silent on the subject of the maintenance of the mouth and teeth in a state of health; they deal almost wholly with processes of remedy, repair and restoration. This deficiency does not occur wholly from ignorance, for nearly all dentists, and many others, know full well the ordinary results of the neglect of the teeth and mouth. Time and space forbid that we here enter into a full discussion of oral hygiene. Is it not quite as necessary that we apply the knowledge we have of this subject, as to strive for more knowledge while we are not utilizing what we have? I doubt not that three-fourths of the diseases of the mouth and teeth are preventable by a right application and exercise of the knowledge we have upon the subject of prophylaxis. There is, of course, much to be learned, and it is commendable to make all possible progress, but let us, by all means, appreciate and apply the knowledge and ability we have; if we possessed more light and knowledge, and made no better use of it than of the knowledge we already have, we would be none the better, but worse.

In the further consideration of this subject, I will ask your attention to one or two offensive conditions of the teeth, with which all dentists are more or less familiar; all are familiar with

the ordinary deposits and accretions that are found in the neglected mouth.

Perhaps the most simple and least excusable of these is a more or less vitiated mass of soft pasty matter, consisting of food material, thickened mucus, and waste from the adjacent tissues. This is usually found in greatest amount at and near the necks of the teeth, and beneath the margins of the gums, and between the teeth; this material ordinarily undergoes putrefactive change quite rapidly. The character of this change, and the form which the material may assume, will be modified by the state of fluids of the mouth, by the character of the breath, and somewhat doubtless, by the condition of the alimentary canal; the change in this material will also be influenced by "mouth breathing"; this evil habit tends to produce thickening of the mucus of the mouth by evaporation of its water; variation in thermal changes is also by this means induced; foreign matter in the form of dust organisms, and whatever may be in the air, will be taken into the mouth by the "mouth breather." All this tends to hasten change of matter that may be lodged in the mouth; this variety of accumulation may be found upon all the teeth in the mouth, perhaps in larger amount, however, upon the buccal surfaces of the molars, and the anterior surfaces of the inferior incisors, and oftentimes upon the labial of the superior incisors and cuspids, upon the latter it is usually found in its most offensive condition; upon the entire surface of any or all of the teeth this accumulation will often be found, and especially is this true of those not used in mastication. It will usually be found in its most offensive state where fresh saliva comes most in contact with it, and so, nowhere is it found more offensive than upon the labial surfaces of the superior anterior teeth. The influence of this material is injurious in several aspects or directions; it usually possesses a more or less marked offensive odor, due to its putrefaction, and this is often given to the breath; and in "mouth breathers" this offensive condition will be carried to the lungs, as well as thrown out by the breath. This offensive matter also necessarily more or less mixes with the food, and is taken into the alimentary track; this accumulation is usually more or

less irritating to the margin of the gums, and to the mucous membrane.

In all cases where it exists in any considerable quantity at and beneath the margin of the gum, there will be an inflamed condition of the tissue, more or less pronounced, and of greater or less outreach according to the susceptibility of the tissues, and in many cases persistent suppuration of the margin of the gums is the result, and sometimes disease thus induced extends into the sockets of the teeth, causing more or less pronounced disease there.

The persistent presence of this material especially upon the buccal surface of the superior molars, and upon the labial surface of the superior incisors, is a fruitful source of decay of these teeth, and especially so where there may be defective enamel, or where it passes beneath the margins of the gum and beyond the edge of the enamel; evidence of this destructive influence is shown by the fact that very rarely does decay occur upon this surface of these teeth when they have been kept wholly free from this deposit.

This accumulation is almost universally found upon the teeth of those who do not masticate as nature designed. Those who live upon pultaceous food, requiring little or no friction in the act of mastication, usually have this material in large quantities. Different kinds of food vary in their liability to undergo change; some under a given influence will decompose rapidly, others under the same influence much less rapidly.

In giving directions for the hygienic management of the mouth, the things here referred to must be taken into consideration, viz: the habit of mouth breathing has its deleterious effects upon the mouth, the teeth, the throat, etc. The patient should be made to understand the influence of a vitiated breath, and to understand that there is always more or less of mischief in connection with it that ought to be remedied. Always when an offensive breath is present, it should be a matter of earnest solicitude on the part of the patient; the condition of the alimentary canal oftentimes has much to do in vitiating the breath, and in inducing an abnormal state or condition of affairs, but a course of

life should be adopted by the patient such as will change conditions for the better.

"The mouth breather" should contract the habit of keeping the mouth closed, and using the legitimate organ for respiration; the best possible condition of the general system should be maintained by a full observance of the laws of health and hygiene, to this end, good and nutritious food should be used, mastication and insalivation should be thoroughly accomplished, all the eliminating organs of the body should be maintained in a most perfect condition, each one should be so managed and treated that its peculiar work will be well accomplished. To these conditions very little, if any attention is given, by the average practitioner of dentistry. The remark was not long since made, in the hearing of the writer, by a prominent dentist, that "he did not regard it as his duty, nor the business of a dentist, to cleanse the teeth from that which the patient himself could remove." Now, while in one sense this may be true, it does betray a want of appreciation in respect to this matter; it is as important that the teeth and mouth receive attention in regard to purity and cleanliness, as that decayed teeth be filled, or that diseased gums, or alveolar abscess be treated.

A great many excuses are made for neglect in this matter, such as: "I have been sick, or not very well, and so my teeth have been neglected." Another, "I have been away from home and had not the opportunity to attend to my teeth"; "I have not the appliances or preparations for keeping my teeth in good condition"; "I did not know that there was anything objectionable or pernicious about or upon my teeth, or even in the mouth." Another says, "I have been so very busy that I had not time to give attention to this matter." How much influence any or all of these excuses ought to have, or will have with any one who fully appreciates the value or importance of a healthy mouth and good teeth, I leave you to decide.

Let us then, as we go forth in the exercise of our professional duties, use most efficiently the knowledge and resources we have. In time of peace prepare for war; in time of health build barriers against the incursion of disease, and not wait till it is

upon us, and then put forth efforts in meeting it, which are in so many instances fruitless, and at best serve but a very temporary purpose.

#### DISCUSSION.

*Dr. C. P. Dennis*, Portsmouth. This subject is too important to permit it to go by without some discussion, as it is one we have to deal with in our daily practice. I will undertake to say that it is much like our religious duties, there is so much difference between the profession and our conduct in the matter. It is a very important matter also because the durability of our operations in the mouth depend so largely upon the condition of the mouth and teeth and the care that is taken of them. I try to impress upon every patient who comes into my office the necessity for caring for the teeth, and when I have not got time to talk about it, I give them printed directions. It seems to me, we cannot expect operations to be lasting unless the mouth and teeth are kept in a healthy condition. In the press of business of attending to our patients we forget these things, and as I have before said, I keep slips containing directions near by me, so that I can hand them to patients as I discharge them. *Dr. Taft* has covered the ground so thoroughly, that there is very little left to be said. I commend the paper, because it tells us to do our duty rather than what our duty is.

*Dr. W. H. Whitslar*, Cleveland:—There was a discussion at a previous session of the society on the care of teeth during pregnancy and lactation, and it strikes me that this subject would have come under that head very nicely. The means of proper food, the proper filling of teeth and care of the mental state were touched upon in that discussion, but nothing, to my knowledge, was said in regard to the teeth from a hygienic standpoint. It has been my experience that women during the period of pregnancy and lactation have so much to do in taking care of children that their minds are constantly occupied in that direction, consequently they neglect their teeth. If they had taken care of them, provided they were of good structure, they would not have decayed. We must not at all times say that teeth decay because

they lose their lime salts, or because they are not properly filled. Care of teeth during pregnancy and lactation by the proper means, the use of the brush, etc., will prevent them from decaying in a great many instances.

*Dr. J. Taft:*—It strikes me that this is a matter of importance both to the dentist himself and the profession, because the greater efficiency he can secure in that which he does for his patients in the way of arrest of decay of the teeth, the better will he be held in the estimation of those whom he serves. It is his duty from the stand-point of self-preservation, so far as professional reputation is concerned, and it is his duty to give such directions as will secure the most perfect results in this respect. There are various conditions in life; there is a lack of care on the part of the people in regard to their teeth. Sometimes there may have been much work done in the mouth of the patient, and he has received no instruction about its care, and by and by he or she becomes negligent and an accumulation of debris is made upon the teeth and remains for an indefinite period of time. Indeed, all of you have seen cases of the first, second and third molar, where there has been an accumulation of material upon the surface, undergoing decomposition, and you can almost predict in many instances that beneath this accumulation there is disintegration of tooth substance. If a filling has been put into the surface of the tooth you will almost instinctively come to the conclusion that the condition is faulty, and I suspect about that filling there is decay. In a great many instances it will be found that disintegration takes place there. Now then, it is important for the dentist, from a professional stand-point that he should pursue that course in the way of impressing upon the minds of his patients the necessity for care in this respect for the preservation of their teeth.

Another point. Every one, who is a regular patient; should have his or her mouth examined at certain intervals, perhaps every six months on an average. Some patients ought to have their teeth examined every three months. The dentist should see that the patient is careful in this matter, if possible, and not allow him or her to lapse into careless habits; he should see that

they are masticating their food well, and that there are no extensive breaches made in the teeth. Other patients will go along six months without an examination of their teeth being necessary, and still others nine months, and you feel satisfied to let them go that long, knowing that they are careful in their habits. Another patient of different habits will have large decay made within a year's time. The character of the teeth, their susceptibility to disease, modify the circumstances relative to the frequency with which the teeth should be examined. The dentist who examines the teeth of regular patients should see that every filling is in good condition all the while. Filling should be gone over and kept in good condition, for there is no reason in the world why fillings may not be impaired by use in three or four years, by abrasion or roughness produced in various ways. When we get a hole in our boot, we have it repaired; when we get a hole in our coat, we have it mended; but teeth oftentimes go along without being touched. Teeth should be examined in this respect; and we should insist upon those who hold us responsible for their teeth, that these examinations shall be made. A patient holds you responsible for what you have done. We hear it said sometimes, "Dr. So and So filled my teeth, and they are all gone to pieces." Insist upon seeing the cases frequently and do whatever is necessary to maintain a perfect condition of the mouth. That is due to the dentist. As he builds up his reputation so he is established in the community. It is a duty we owe both to ourselves and patients.

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### **The Use of Antiseptics for Sterilizing Cavities before Filling.**

BY H. A. SMITH, D.D.S., CINCINNATI, O.

Read before the Ohio State Dental Society, held at Columbus, December, 1891.

My purpose in this paper is to consider briefly the use of antiseptics in sterilizing carious dentine in deep seated cavities.

It is now regarded as good practice to leave in the bottom of cavities a layer of carious dentine if by its removal the pulp should become exposed. In such cases the continued health of

the pulp depends upon the thorough sterilization of this layer. Upon this point, Prof. Black says: "Where we cover in a little bit of softened dentine over a pulp nearly exposed, we may cover in the anærobic microbes. In a short time they may produce products that will destroy the pulp, or they pass through and penetrate into the pulp and infect it. This action is brought about rapidly and the poisonous matter escapes towards the pulp. If we have covered these microbes in with the filling we have sealed up the elements for destroying that pulp. So here we need an antiseptic."

In considering this subject, naturally the first inquiry would be, what chemical or physical changes have taken place in this layer? Dental caries suggests decalcification. The degree to which decalcification has taken place depends upon which portion,—the superficial, the middle, or the deeper seated portion—of softened dentine is under examination. Prof. Miller in his recent work gives the result of his investigations upon the whole mass of softened dentine in the cavity, to ascertain the comparative loss of the organic and inorganic constituents. After giving his methods and the result of analysis, he says, "In plain words the carious dentine had suffered an almost complete decalcification—only one-thirteenth of the original amount of lime salts being present. The organic matter had suffered the comparative small loss of two-fifths of its original amount. This loss is no doubt attributable for the most part to the direct action of micro-organisms upon the more completely decalcified portions of the carious dentine." Continuing, he says, "The results of these experiments show that the organic matter yields last to the destroying agents." It will be seen, then, the layer of carious dentine which we propose to sterilize, is, more or less, composed of the organic matter which was originally the basis substance of the dentine. Therefore it is albuminous, and if tested, should give an acid reaction.

In selecting an antiseptic for the purpose indicated, the length of time the antiseptic may be permitted to remain in the cavity before introducing the filling, should be considered. If only for a few minutes, or during the excavation of the cavity, the antiseptic should be one that will not coagulate albumen and

one that is quickly diffusible. In some of the oily antiseptics we have those that meet these conditions, preferably the oil of cassia, oil of cloves, oil of turpentine, and eucalyptol. The diffusibility of these oils is conclusively shown by the experiments of Prof. Harlan. His conclusions are also fully borne out by clinical experience. In cases requiring immediate treatment, after thoroughly drying I usually apply oil of cassia and oil of cloves, equal parts. If the carious layer is of considerable thickness would apply oil of cassia alone. The latter being somewhat irritating, the addition of oil of cloves will, in a degree, modify this action, if liable to come in contact with pulp tissue. Myrtol has been highly recommended by Prof. Harlan because of its being a very pleasant, non-irritating and highly potent antiseptic. Those who believe the ideal antiseptic should be soluble in water, may use carbolic acid, bichloride of mercury, terchloride of iodine, or the latest addition to this class of agents, lysol, a perfectly soluble antiseptic of the cresol group. Of the above, carbolic acid is most frequently used, and I have no doubt that in many cases if permitted to remain sealed in the cavity several hours, from 5 to 10, will effectually sterilize carious dentine. To overcome in part the coagulating properties of carbolic acid, I have been in the habit of using a mixture of carbolic acid one part, oil of cassia two parts, oil of cloves three parts. In cases when a permanent filling must follow treatment at the same sitting I find the above modification of Prof. Black's 1, 2, 3 mixture very satisfactory.

I have already referred to the need of dryness in the antiseptic treatment of this layer of carious dentine. This cannot be too strongly insisted upon. If the layer, especially the upper and more albuminous portion is saturated with moisture, the diffusion of any of the antiseptics, would be greatly retarded; besides, if an antiseptic readily soluble is used, its effective strength may be reduced to a degree which renders it inert. In the layer nearest the pulp, where we may suppose caries is still active, the normal tubular structure of dentine is more nearly maintained. These minute tubes are a physical barrier to the diffusion of an antiseptic, whether in solution, an oil, or an emulsion. And if the moisture which is natural to the protoplasmic contents of the

tubules, or to the micro-organisms in them is not removed in greater part, the diffusion of the antiseptic is still further interfered with. How may we obtain this dryness? By bathing the layer with an agent which has an affinity for water, as alcohol, and evaporating it with warmed or heated air.

The methods practiced to obtund sensitive dentine by dehydration are usually efficient, and if carefully followed out, by the time the cavity is prepared, we will have desiccated the layer of carious dentine in the bottom. The use of alcohol for this purpose may be objected to because of its coagulating effects upon albumen. This property, however, would be very slightly exhibited, because of the rapidity with which it would be evaporated by the hot air blast.

It may be in order, in this connection, to refer to a class of cases in which caries recurs after the tooth is filled, because of some defect at the margin of the cavity. Caries advances along the wall of the cavity until the bottom is reached. Here we find a softened portion of dentine extending partially under the filling. Often, because of the difficulty in reaching this diseased portion, the filling is removed and the whole operation done over. This in some instances may be avoided provided the layer of carious dentine beyond the reach of the excavator can be sterilized. To accomplish this, the whole of the softened dentine must be thoroughly dried, the antiseptic applied and the opening carefully sealed for a day or two, after which permanent repair of the filling may be made.

It may be said, lack of thoroughness in the removal of carious dentine, begets carelessness in our methods of practice, and yet, if partially decalcified dentine on the walls of the cavity well away from the margins, may be made fixed matter, why may it not be left?

In the class of cases above described, the difficulties in sterilization increase in proportion with the increase in thickness of the layer of softened dentine under treatment. For this reason, and because of a lack of knowledge of the relative potency of the various antiseptics we use, it would be well, perhaps, to restrict their application to the sterilization of layers of carious dentine left in the bottom of cavities for pulp protection.

## Some Practical Points in Regard to Methods in Construction of Crown and Bridge Work.

BY G. W. MELOTTE, D.D.S., ITHACA, NEW YORK.

A talk given before the Ohio State Dental Society, Columbus, Dec., '91.

*Mr. President and Gentlemen of the Ohio Dental Society:*—Owing to the brief time allowed me, I shall only be able to touch upon a few points involved in the construction of crown and bridge work.

Gold, in holy writ, stands for truth, and for all the metals it must ever stand as the most useful in the construction of this new class, of gold restorations or bridge work, together with its companion, platinum.

It is curious to note the readiness with which pure gold and platinum can be welded by pressure.

Two pieces of pure gold and platinum having clean surfaces, perhaps one-half inch in width, and two in length, can be readily welded by grasping them in the pliers and bringing the pieces to a red heat over a Bunsen burner, then quickly passing them through the rolling mill, and the result will be the same perfect union of the gold and platinum that can be obtained in the manipulation of gold foil.

With this combination of metals the backing or lining of porcelain teeth can be accomplished with most perfect results. A tooth of light shade owing to its translucency, can be given a beautiful yellow tint by placing the gold side next to the tooth, or a gray tint will be produced by placing the platinum side in the same position; while the cutting edge or lower portion can be changed by using them in combination.

Pure gold, or any carat of gold ordinarily used in crown or bridge work, in making bands or collars, can be united or welded without the use of solder.

A creamy paste of borax and water is made by rubbing the borax in water on a slate or ground glass, and is applied to the surfaces of the metal; then with a soft flaring flame of the blow

pipe the entire band is brought to a perfect red heat, when a concentration of the flame will produce a slight surface fusion or welding. It will be understood that in this welding the edges are lapped. The advantage of thus uniting metals without solder is, that the carat of gold is not lowered at the point of contact, rendering the entire band more malleable and therefore more readily adjusted to the natural crown, and less liable to melt in future heating. Should a stretching of the band be found necessary, it can be done on the horn of an anvil at the point where the lap is made.

I learned this method of welding from Dr. Bing, while visiting him.

We will now construct a bridge to supply the loss of the first and second bicuspid and molar, right side, lower jaw.

For the anterior anchorages or abutments we have a sound cuspid and the root of the lateral incisor; posteriorly, we have a sound molar. Many bridge workers would amputate the crown of the cuspid, making a Richmond crown; but objections are often raised by patients to such heroic practice; and to avoid cutting the tooth off, we will band it as is illustrated in "American System of Dentistry," Vol. 2, page 939; or see my article in "Cosmos" December, 1886, on "Crown and Bridge Work". Upon the lateral root may be placed a Richmond crown; these when united will form a perfect anterior anchorage. The molar which is to form the posterior anchorage, having no occlusion with an upper tooth, may be banded and capped. See as above.

The anchorages or abutments having been constructed and placed in their positions, the next very important consideration is taking the bite for the occlusion of the teeth to be supplied. Modelling or impression compound, made plastic, is placed along the ridge between the abutments, and the patient is then directed to close the mouth, using care as to correctness of the closure; cold water may then be applied to the compound with a sponge or napkin, for the purpose of cooling or hardening the material. Remove the compound, and with a knife cut away from the buccal and lingual sides, leaving just enough to give the impression of the upper teeth, and leaving the gold anchorages exposed as

much as possible, consistent with the retention of the compound impression, when replaced, avoiding the lapping of the compound on to the grinding surface of the gold crown anchorage. An impression of the whole is now taken in plaster, which includes all the anterior and posterior teeth. When the plaster is set quite hard, remove the impression, and if the segment of modelling compound should separate in the removal it can be readily replaced ; and also it is important to see that the anchorages are in their proper positions.

We will next place two dowels made of ordinary pins in the impression of the central and cuspid, press the points into the plaster sufficiently to hold them in an upright position, then with cutting pliers cut the pins, leaving them about one-half inch in length. The impressions of the crowns of the teeth are then filled with fusible metal, melting at about 150 degrees. The balance of the impression is then varnished, the anchorages filled with investment material, Plaster of Paris and Marble Dust. When hard, the impression cup is first removed, and the plaster is cut away from the metal teeth, care being taken not to mar the segment of modelling compound.

The advantage of the fusible metal is that it obviates the danger of defacing the teeth not used as anchorages, but necessary in the occlusion. The modelling compound will be seen on the model in the same relation that it was before taking the impression in the mouth. An impression of the antagonizing teeth in the upper jaw can now be taken in plaster, and the fusible metal poured into the impression at once, and as soon as cool it can be removed, thus giving a perfect representation of the upper teeth, which are to be placed into the imprint of the modelling compound, and then adjusted in an articulator. By this method a very perfect articulation of the teeth can be obtained, which is of great importance to bridge work.

Time will not admit of my dissecting the methods involved in working dummies, which are to form the bridge.

A member. Do you band before you put the fusible metal in?

*Dr. Melotte* :—I do not. It would be well to do it, but I have not got time, as a rule, to do that. Perhaps it would be well

for a man to do it when he first commences to do this kind of work.

A member. Will you please tell us how you weld gold?

*Dr. Melotte*:—"The Lord breathed into man the breath of life." I use some of it in connection with the blow-pipe, and by coating the surface with borax you are enabled to bring it up to the heat of fusion. The molecules of the upper layer to the lower layer will come in contact with heat and readily unite. If you are not careful you will spoil your band, so it is well enough to take a good many pieces of gold and lap them. In doing this work it is well to have a blacksmith's heat, which is a general heat, heating your band up thoroughly before you concentrate the heat, otherwise it is better perhaps to point the flame a bit—heating it up until the material is ready to melt, then you get your welding. You may spoil a number of bands of gold before you are able to succeed, but you will be surprised how well you can do it if you learn to emit a nice flame with the blow-pipe.

A member. Why do you use shellac on porcelain?

*Dr. Melotte*:—"Because in burning, it carbonates and gives you a layer of charcoal next to the porcelain. It protects the porcelain more perfectly than it is protected with the ordinary investment of plaster of Paris."

*Dr. Harroun*:—"I am in the habit of coating the surface of a tooth to prevent the plaster of Paris from melting. It forms a curtain there, so to speak, prevents the plaster from shrinking down, and forms a roughness on the surface."

*Dr. Melotte*:—"That point was suggested to me by a dentist of Utica in combining the porcelain and gold. He told me that was the course he pursued. I find it is a nice thing to do. I am conscious of the fact that with porcelains you can not be too careful to keep them from contact. Considerable expansion and contraction take place when the molecules are under the excitement of returning to their primitive condition. Of course there is great danger of breaking. Dr. Starr suggested that pieces of mica be put between the porcelains we use. In olden times it was suggested that a piece of tissue paper or writing paper put

in between would prevent breaking. I think mica is a very good thing indeed for this purpose. We should see that the porcelains are not in contact when they are invested.

I have reached a point now where I have constructed my abutments. I call your attention to one of the most important points connected with the work, and yet one of the simplest—taking the impression. If this tooth (illustrating) leans toward the anterior teeth, or if there is a wedge-shape or straight space, you may have trouble from breaking of the plaster, making your impression imperfect. To obviate that I take a piece of modelling compound and press it with my fingers between the teeth. I remove it, put it into cold water, then with a knife I trim on the buccal and lingual surfaces, leaving them a little narrower on the top. Before placing it back I warm the surface and direct the patient to bite down on to it, leaving an impression of the occluding teeth. Be careful to see that the patient bites correctly. Now, remove the piece again and trim so that the modelling compound will come in contact with the anterior and posterior portions of the band, but not to cover any more than you can help. You trim it and replaced it. It is in position. The patient has bitten down upon it. You may let them try it again if you are certain they will bite in the same place. The imprint of the cusps are there. Now you take the impression in plaster, the modelling compound being in position. You take your plaster and if the compound remains in the mouth and does not give way with the plaster, remove it and put it in its place. Now, in taking an impression I find that the imprint of this tooth is in the impression. There are few men who practice making impressions with bands on, preparatory to making a restoration or bridge; they take impressions in modelling compound. They may be experts in that particular line, and they may succeed in a small piece of bridge work, and may with their method save time, but I would not attempt to do it. A gentleman said to me a short time ago, "It takes so long to remove a plaster impression from the model," and that is one of the reasons why he does not use it. Then again, sometimes patients object to certain things you want to do. My patients do not

object because I do just as I have a mind to. As a rule I do, or else I do not do the work.

I have taken the plaster impression and am about to pour into it plaster of Paris to make my model upon which my bridges are constructed. I take two pins and place them into the impression of two of these teeth a little ways apart. The heads are standing up, and the impression is before you, and you are looking down into the imprints of the teeth. I take the pins, place them in the cutting edge of the teeth in this case, then I take some little bits of fusible metal and cut it off with excising forceps and place it into the imprint of the teeth, and with a puff of the blow-pipe diffuse the metal and jar it down, and then you have got the tips of the teeth like that which you see represented on the board. Dr. Templeton has three or four combined tips that I removed from a case while he was with me. He will show these tips to you at my clinic this afternoon. I will take an impression of some one's mouth and show you the method of making these tips. You cut off the ends of the pins and leave the dowels around them, leaving the pins one-half or one-quarter of an inch in length, then fill up the model with investment material, plaster of Paris and marble dust. One-third marble dust and two-thirds plaster of Paris is about the formula. You have finished the model previous to pouring fusible metal in there. Your plaster is hard, you cut away and down on to these teeth, cutting away the plaster impression you cut the tips. You are not endangering or marring them. I have got to a place now where I find my modelling compound is in the same position with the cusps upward (this being a lower case) that it was when the patient left the imprint. You readily see that. When I have taken an impression of the occluding teeth (and I take with plaster) I pour in fusible metal quickly. If I do not get a perfect occlusion I can pour it several times; I get it quicker than it takes the plaster to set.

A member. Will you tell us how you make a dummy?

*Dr. Melotte*:—I will state first what happened in my office. My assistant was working for an elderly gentleman and he got to the point of adding the dummy, and he turned to me and said,

“What shall I do with the dummy?” The man looked up at me with daggers in his eyes but the young man gave him to understand that he did not mean him.

I do not know how they came to be called dummies unless they were considered dummies who worked at them first.

I will make the first dummy and shall prefer to take an ordinary cuspid tooth, and in grinding it I may find it is too long from the pins up to the cutting edge. Dr. Richmond showed me this method of grinding a cuspid tooth to keep the proportions perfect, that is, to grind from the lingual toward the labial surface, as perhaps you are able to see this tooth (illustrating). You take a tooth that is blunt on the end, the advantage is that you make it upon the porcelain, so that when you add gold you have got a better looking tooth than you would otherwise have; then, besides, you first put a piece of backing on, and this backing and the tooth are ground on the surface, the backing being beveled with the porcelain. You then take a piece of thick gold and where you want great strength on the point and desire to prevent the teeth from breaking, I should use gold that has about 5 per cent. of platinum, using No. 23 or 24 and let it extend about a line above the cutting edge, wax it, and it would be ready for investment. You take a die and swage out a bicuspid, take one of the bicuspid dies, swage out a piece of gold, place it on, bevel toward the outer cusp, so that it will fit on to the tooth in the manner in which I hold this, wax it in place and invest it, varnishing it at first. Invest in plaster of Paris, marble dust or sand, then after the investment has set, dry it out, melt out your wax, add your gold carefully; you may put in tips of gold coin or fillings, fill it up with fillings and solder, and in that way you have got your dummy made for your first bicuspid. Proceed with the next and with the molar in a similar manner, and you have your dummies, which, of course, you have tried on and arranged with a view to the occluding teeth. Of course, this work needs care and time, and I can not find language to describe to you definitely just how to proceed. There is an important point I want to make, and that is that each one of the dummies should be ground, the porcelain and the

gold, so that they will touch the ridge, and especially in those cases where there are any bridges which failed to have touched, because the tissues will kindly form around the points of contact and you need not be much afraid of inflammation, and if you get a little hypertrophy you can allay it as well with a saturated solution of salicylic acid as any thing, and after a little the gum will kindly form and it comes up around rather than shrinks away from the dummy.

During the Doctor's remarks he made use of illustrations, the absence of which detracts materially from the clearness of the Doctor's verbal description, but to make up for it, reference has been made above to his articles on the subject, illustrated in the "American System of Dentistry" and "Cosmos".

In the afternoon the Doctor gave a clinic, demonstrating the methods referred to in his address, but laboring under the usual disadvantages incident to the want of the many conveniences of his own office.

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### **The Treatment of the Teeth During Pregnancy.**

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BY DR. J. W. VAN DOORN, CLEVELAND, O.

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I cannot hope in what I may say on this subject, to add anything new, or to give anything in the way of data, from cases under my own observation.

I was induced to choose the subject for two reasons: first, that it seemed likely to provoke ample discussion because of the many opportunities for differences of opinion which present; secondly, that by the discussion, ideas, new to the younger men of the Society, at least would perhaps be brought out.

For no man can have practiced successfully, for many years, without having had some cases of this character under his care. What he did for them, outside of the actual operations performed, doubtless he will remember, together with the results, gratifying or otherwise. Let each one then contribute his experi-

ence and his opinions derived from that experience, and we shall get at the matter thoroughly and beneficially.

The dentist no longer confines his attention to the teeth only. He looks beyond. This is not so much a matter of choice as it is a matter of necessity. We do not seek out the conditions, but rather are confronted by them. And so it follows that we find our duty and our sphere widening in many directions, one of which is suggested by our subject this evening.

Those of you who already measure your experience by years, can, without doubt, recall instances where the patient who came to you had had little or no dental work done, until called upon to fulfill the duties of maternity. You can probably also recall instances in which the work you have done, beautiful and stable for years, suddenly and under like conditions, becomes anything but a protection to the teeth, a sorry exhibition of your skill, a disappointment to the patient and a matter of more or less vexation to yourself, blameless though you know yourself to be.

For it is not always a patient who is able or willing to discriminate.

The fact is therefore apparent that during the period of gestation the teeth are likely to become sensitive and carious; and that we, in treating them, need to exercise judgment as well as skill. For our efforts, if successful, benefit not the mother alone but find perhaps their greatest usefulness in the developing embryo.

What actually takes place? On this point authorities differ.

Is the decay of teeth during this crucial period, due to the absolute abstraction of the chemical constituents; is it due to what Dr. Abbott calls a "melting away" of the salts of their bodily transfer through the circulatory system to the embryo in the uterus?

Or is it due to the action of the acid secretions now constantly present in the mouth?

This much we know. That the teeth become painful and sensitive to an exalted degree. Undoubtedly this is due to the action of acids. For it is no unusual thing for the teeth to be thus affected among the perfectly well. Now comes another

phase. The mother often exhibits an abnormal craving for lime, chalk, slate pencils and the like.

Some say that this appetite betokens Nature's effort to supply the waste. Others that it is simply Nature's attempt to afford an alterative for the general acid condition of the system which now obtains.

"If to supply the waste," say the first, "why the craving for lime *as lime*, which is unassimilable? Why the craving for earthy phosphates which, *as earthy phosphates*, chemistry proves useless to the animal economy." This would seem to support the theory that the system simply needs an alkali, and, having that, is satisfied. This is not to build up, not to make good a deficiency, but merely to correct an acid condition and possibly arrest destructive metamorphosis.

On the other hand, what do we find corroborative of the theory of waste and the ability to repair that waste by the introduction of soluble salts of lime? One of the first things I found was this assertion of Prof. Black's, anything but corroborative you will agree with me. He says: "A tooth once soft, always soft; no change takes place in that tooth, because of the introduction of lime salts into the system." Questions leap to our minds that we would like to ask Dr. Black, if this be so; but as we look the field over we find him hopelessly in the minority, and so decide rather to select opinions from the other side than to devote any time to argument on this point.

Dr. Dwinelle says, in effect, "Keep the system well supplied with the bone phosphate of lime, diet always toward the alkaline, use locally ant-acid mouth washes and dentifrices."

This is a summary of his treatment, and I transcribe one case of many cited by him, as proof of its efficiency. The proof, it is true, is with reference more especially to the child than to the mother, but that is hardly an impairment of the theory, I think, since the two are scarcely to be considered separately during this period.

"Mrs. C. had passed through two painful periods of gestation, with excessive acid secretions and vomiting most of the time, giving birth to a girl ten years ago, and two years later to a boy.

The girl's first teeth were remarkably poor. All that were erupted of the second set can be cut away as though they were were chalk. The teeth of the boy are all even worse than those of the sister.

“When the mother became pregnant a third time, with all the symptoms in an unusually aggravated form, I at once put her on the phosphate treatment and prescribed diet together with general tonics. She at once began to mend. The acid secretions and eructations abated entirely; her vomiting ceased at the end of the second month, and did not return. She passed through a remarkably healthy gestation and gave birth to a boy. You may anticipate that I watched the eruption of his first teeth, with interest. They proved to be of the finest quality. The six-year teeth are already fully erupted, perfect in all respects, and of unusual density.”

I could have wished that Dr. Dwinelle had given us some statements with reference to the condition and character of the mother's teeth originally. That would perhaps have given more light on the result in the first two children, without detracting any from the value of the treatment in the last case. Something, too, in the way of a statement as to the time of eruption of the teeth in the last case, would have been a help to us, provided it was either early or late.

Dr. Darby, commenting on the remark of Prof. Black's, already quoted, says, “I differ very materially from Dr. Black, on this point, because I am positive that I have seen changes take place in the teeth for the better; teeth that were soft, in early life, becoming hard and good later in life. I have also seen in my own practice, cases where a diet composed largely of phosphates was introduced, where the diet had been of a different character, containing little phosphates, and the teeth being in bad condition; and the favorable results upon the teeth, following the change in diet, were truly wonderful.” Dr. Darby then goes on to say, “I think, if we could introduce into the system of women, during the period of gestation, a greater proportion of the phosphates in their food, there would be a great improvement in the teeth of their children:”

And so we might continue adducing experiences and opinions. The consensus of the best writers seems to be, summarily speaking, that the system should be kept well nourished during this period, particularly with appropriate salts of lime.

Now let us look at the matter more in detail. First as to ordinary diet. Let the mother eat sufficiently of bread made from coarse flour, in which has been retained the phosphate-containing outer capsule of the wheat kernel. I suppose Graham bread, rye bread, and particularly corn bread, would recommend themselves in this respect.

Corn-meal mush, oat meal and rolled wheat, of course, would figure prominently as desirable foods.

Plenty of well cooked beef, baked potatoes and soups made of such vegetables as peas, beans and so forth, would have their place.

Unfortunately, however, the taste may reject many of these simple and more natural means of affording a supply of the phosphates. It then becomes necessary to furnish them in another form, readily assimilable and palatable.

From among the variety of ways in which this can be done, I choose, as at once the simplest and most effectual, the Syrup of the Lacto-phosphate of Lime, to be given in doses of a dessert-spoonful in a little water after meals. This is simple, agreeable to the taste and very effective, if we may rely on the testimony of those who have used it.

Lactic acid to be given in alternate weeks. Dose: A table-spoonful, to which has been added gr. xii. *Caleii Phosphatis* (freshly prepared), three times a day, is another form in which we may administer the phosphate.

So much for the direct treatment. Incidentally we may be required to alleviate the frequently occurring nausea of this period. For this, *Ingluvin*, in doses of gtt. v. *ad. x.*, as needed, is recommended.

Tonics, as indicated, should be used, and of course with them the proper means to keep the movement of the bowels regular.

In closing this part of the subject, the following questions suggest themselves:

What causes the acid conditions at this time more than another? Is it due to mal-nutrition, mal-assimilation? When nutrition is good, is the acid condition as marked? If it is, how do you account for it? Why do the teeth of the mother soften? Is it because of the dissolving influence of the acid secretions? Is it because the teeth directly go to supply the embryo, or because they are robbed of their quota of nourishment by the occupant of the womb?

In supplying the mother's system with an abundance of bone-making foods, is or is there not danger of excessive or premature ossification of the embryo, making labor difficult?

As briefly as possible, let us now consider the subject of operations at this time. Dr. Darby says, "My own practice has been, during the period of pregnancy, to fill the teeth with plastics only, as much as possible avoiding large operations and the use of metallic substances." Such is practically the unanimous opinion of the profession. The following rules are suggested:

No extracting, if it can be avoided.

No administering of gas under any circumstances.

In filling teeth, plastics only, gutta-percha preferred to the cements, as the latter rapidly succumb to the acidity of the oral secretions.

That anything fatal must perforce come of an infringement of these rules is not the point sought to be established. Direful results are possible, if not probable. It is not enough for me that you say, "Why, I have given gas to hundreds of women in that condition with no bad results;" or, "I have extracted lots of teeth for pregnant women without harm!" As I look at it, this is not a legitimate field for experimentation, to discover how much we can do, but rather a field for marked conservativeness of action.

I now leave the subject, feeling, in the words of a familiar quotation, somewhat perverted, that "I may have said the things I ought not to have said, and may not have said the things which I ought to have said." If the latter part of this be true, there remains the consoling thought that they will be said and better said by those who follow me.

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## PROCEEDINGS.

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### Walnut Hills Medical Society.

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Dr. Shields reported the case of a lady, thirty-five years of age, who applied to him for dental work. Before filling a cavity, he applied to it and the neighboring gum a 10 per cent. solution of cocaine. In a half hour the patient complained of weariness, and then nausea. Whisky was administered. The face became pale, the hands very cold, and soon the patient was comatose. The pupils were dilated, and, strange to say, a hazy condition of the cornea was noticed. Inhalations of nitrite of amyl were used, at intervals, for an hour, with effect, and the patient was sent home. Was called to her in the afternoon and found her in a hysterical condition, this being followed apparently by coma. Nitrite of amyl was again successfully resorted to. The haziness of the cornea was again noted.

What was the cause of this condition? Was it owing to the cocaine, or to the nervous condition superinduced? Could it have been due to contracted blood-vessels?

The speaker mentioned another case, in which the patient had a tooth removed by Dr. Hill. Two weeks later an abscess developed, and the patient consulted Dr. Shields. The third molar had been removed, and the one in front had been loosened by an abscess. He detected a sinus with the probe, cut down, found and removed a small piece of the root. The fistulous tract opened externally. It was treated by irrigation with a permanganate solution. A large scar resulted.

In a third case a decayed tooth had caused an abscess, which was lanced by a physician. Later the patient consulted Dr. Shields, who extracted the tooth and applied a lead bandage, which was tightened daily, with the result of causing the abscess to discharge internally. No scar, except that resulting from the knife.

## DISCUSSION.

DR. ISHAM.—Have never seen any reference to the hazy condition of the cornea due to cocaine. It does induce nervous manifestations; delirium, or even coma, has occasionally followed its use. Have a limited experience with it, for the removal of small growths, opening abscesses, etc. Have usually noted some exhilaration, and occasionally mild delirium. Several years ago a homœopathic physician, in this vicinity, called at a drug store for a solution of atropia. He claimed that the druggist made a mistake, and dispensed cocaine instead of atropia. A suit for damages was threatened, but the druggist compromised for \$150.

DR. SCOTT.—I have not used cocaine much, but have never had any bad results from it. Is it not possible that the haziness of the cornea was due simply to the shock? Is there not always some diminution of transparency in the cornea associated with shock?

DR. PORTER.—Have had comparatively little experience with cocaine. Have used it occasionally in circumcisions and a few other minor surgical operations. Its safety and efficiency depend upon the extent to which the local circulation can be controlled. Most of the fatal accidents have occurred in operations about the rectum and genito-urinary organs, parts richly supplied with blood, and in which the circulation is not easily controlled. Cannot explain the haziness of the cornea in the case reported.

DR. JOHNSTONE.—Was the patient menstruating?

DR. SHIELDS.—I do not know, as I never ask such questions, fearing offense.

DR. JOHNSTONE.—How much of a role does tuberculosis play in the destruction of teeth?

DR. SHIELDS.—I have noticed nothing of its effects.

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### Antisepsis for the Hands.

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At the Johns Hopkins' Hospital the use of bichloride of mercury as an antiseptic has declined to a considerable extent, in favor of solutions of permanganate of potash in combination with oxalic acid. Dr. Malcom McLean, at the October meeting of

the New York Obstetrical Society, reported on his use of three formulæ, given below, for obtaining an antiseptic condition of his hands (see *New York Journal of Gynecology* for December). Having briefly referred to the fact that Dr. W. H. Welch and other members of the Hopkins' surgical staff have come to the conclusion that corrosive sublimate solutions are inferior to those of the permanganate for many antiseptic purposes, the author says that he has found that the scrapings from the finger-nails, etc., taken after an ablution of the hands with any one of the ordinary antiseptic solutions, have developed, under culture in the laboratory, numerous germs. But when solutions of the permanganate of potash and oxalic acid had been used this was not the result, showing the superiority of the later agents. The staining of the hands by the potash solution has been a serious objection, but he believes that this may be obviated by the use of a solution of hyposulphite of soda, one part to sixteen, and oxalic acid, one part to thirty-two of water. The steps of Dr. McLean's process are (1), the hands, having been thoroughly cleaned, are to be held for two minutes in a solution of the permanganate of potash, five parts to one hundred, after which the hands should be rinsed in clear water; (2) hold the hands for one minute in a hypophosphite of soda solution, one ounce to the pint; and (3) while this is being done add the oxalic acid solution, one-half ounce to the pint of water. This causes a double chemical combination, whereby an oxalate of sodium and sulphur dioxide are formed, which have powerful decolorizing and disinfecting properties. The permanganate stains are promptly removed from skin and nails; after again rinsing the hands in sterilized water they are ready to come into contact with either an exposed serous or a lacerated mucous membrane. The hands may then be regarded as both surgically clean.

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### A Higher Professional Standard.

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Much has been said, of late, as to the necessity of elevating the standard of medical education. The work and results of medical colleges have been scrutinized and criticised, and laws passed

and reformation advocated to raise the average college course, and regulate the routine of study.

All this is very well, and we are glad indeed that the best medical colleges in the land have responded to the demand. Our young men will be better fitted for their work, and the increased difficulty of entering the profession will prevent the old men from being crowded out by the great army of new-comers.

To stop short at the medical colleges, however, is far from right. When we see growing tendencies to loose and irregular practice among those who know better, and the strife and jealousy which so often exists among men whose education and work should make them brothers, we feel that there is an equal demand for a higher professional standard among those who are practicing medicine, as those who are at the threshold as students.

We have heard a man insist upon a higher grade course of study for students, and closer examination for graduates, while it was an open secret that his own methods were questionable and his personal character rotten. Indeed, it is often such fellows who make the most noise and, as a consequence, excite the most disgust.

Let the work of reformation which has begun in the schools, be carried on in the profession, until our ranks are free from those who disgrace themselves and all connected with them. There are enough of honest, right-minded men in the profession to freeze out or reform all these fellows—half doctor and half quack. What we need is a recognition of a man's true standard, and the courage to treat him according to our convictions and his deserts.—*St. Louis Clinique.*

The above applies quite as well to dental colleges and dental education, as to those pertaining to general medicine. Improvement is undoubtedly being made, but is tardy in its coming. May the day hasten on when there shall be a higher appreciation of the importance of this subject, and when this will result in actual experience and practical demonstration.—ED. DENTAL REGISTER.

## EDITORIAL.

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### The World's Columbian Exposition.

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We observe with pleasure how rapidly the preparations for the World's Columbian Exposition are going forward, and the interest that seems to be increasing every month, as will appear from the following notices, which we think will prove of interest to some of the readers of the REGISTER:

Vermont will have a building at the Exposition without drawing on the State appropriation for the cost of its erection. One hundred substantial citizens have pledged themselves to pay \$100 each.

Connecticut held an enthusiastic World's Fair Meeting at Hartford, on Washington's birthday, ex-Governor Waller presiding. A committee of sixteen, two from each county, were appointed to look after the State's representation at the Exposition. Sixteen lady managers were also chosen. Subscriptions being called for, \$50,000 was pledged on the spot.

The Rhode Island building will combine the features of the "old stone mill" at Newport, which is of unknown origin, and which is alluded to in Longfellow's "Skeleton in Armor," and those of the "Arcade," a business building in Providence erected about sixty-five years ago.

Sir Henry Wood writes that applications for space are rapidly pouring in from influential firms in Great Britain. He is very enthusiastic over English prospects at the Exposition. Ceylon has sent through him a request for space upon which to build a tea house.

Commissioner McCormick writes from London that Mr. Armstrong will soon arrive in Chicago, his purpose being to present to the authorities of the Exposition a project to reproduce the Tower of London.

Denmark will spend about \$5,500 in showing, as a leading feature of its exhibit, a Danish dairy, complete and in operation; the most approved methods and mechanical appliances are utilized in the dairies of that country.

The great dome of the Administration Building, which will be the most conspicuous architectural feature of the Exposition, and the four smaller domes, will be covered with aluminum bronze, a newly-discovered alloy, which is said to glisten brighter than gold. The American Sculptor MacMoines is in Paris working on the great fountain which will be placed in front of the Administration Building. The fountain will have thirty gigantic figures. Dan'l C. French, the New York sculptor, is also in Paris working on a colossal statue of the Republic for the World's Fair. It will show a female figure nearly seventy feet high.

The party under the direction of Chief Putnam, of the Ethnological Department of the Exposition, who had been making excavations of the mounds in Ohio, for several months, met with rare success near Chillicothe in making one of the richest finds of the century in the way of pre-historic remains. While at work on a mound 500 feet long, 200 feet wide and 28 high, the excavators found near the center of the mound, at a depth of 14 feet, the massive skeleton of a man encased in copper armor. The head was covered by an oval-shaped copper cap; the jaws had copper moldings; the arms were dressed in copper, while copper plates covered the chest and stomach, and on each side of the head on protruding sticks were wooden antlers ornamented with copper. The mouth was stuffed with genuine pearls of immense size, but much decayed. Around the neck was a necklace of bears' teeth, set with pearls. At the side of this skeleton was a female skeleton, the two supposed to be those of man and wife. It is estimated that the bodies were buried fully 600 years ago. The excavators believe they have at last found the king of the mound builders.

Russia, Turkey, Italy, Germany, Holland, Norway and Sweden are all busy planning and working for this great Exposition, and we hope from time to time to add a few more of the many items of interest concerning the work of other countries towards the success of this Great Fair.

B.

### **Bibliographical.**

**CATCHING'S COMPENDIUM.**—The second volume, that for 1891, of Catching's Compendium of Practical Dentistry, is just at hand, and in looking over it we do not hesitate to say that it is an improvement upon the first volume. The selections seem to have been made with more care, and it certainly does in the main present the leading practical matter of our journalistic literature for the year 1891; and it will certainly, if continued, become, in the not distant future, a ready reference book for every progressive dentist, and especially for those with whom it is an important matter to be able to promptly refer, and save the time necessary for the reading of a number of journals. These selections are made from all the journals, and no dentist, except he be engaged in editorial work, has the opportunity to read all the journals, even if he had the time and inclination; but this compendium enables him to refer promptly to the leading practical matter that has been published. It should be found in the library of every dentist. It can be obtained of Dr. B. H. Catching, Editor and Publisher, Atlanta, Ga., or through any dental depot.

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### **Professional—Change of Location.**

We are always pleased to learn of the advancement of our professional brethren, and so it gives us pleasure to learn that Dr. G. L. Curtis, who for a number of years has been in active practice in Syracuse, N. Y., has received a call to go to New York City to enter upon the practice of his profession, which he could not resist. This will afford the Doctor a wider field for the exercise of his professional skill, which is recognized by all who know him to be of a high order. He will confine his practice exclusively to surgical treatment of diseases and deformities of the mouth, face and neck; he has enjoyed unusual opportunities for fitting himself for this line of practice, having made available for this purpose the best opportunities and facilities not only in this country but of Europe as well. We trust and believe that the Doctor will realize the fulfillment of his highest expectations, and in this we believe that we but echo the sentiments of the Doctor's friends everywhere.

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## COMMUNICATIONS.

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### The Work and Duties of the Ohio State Dental Society.

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BY W. H. SEDGWICK, D. D. S.

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Read before the Ohio State Dental Society, Dec. 3, 1891.

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The Dental Societies and our Dental literature have in my remembrance, taken up from time to time different subjects connected with our specialty, and discussed and written, and rewritten on them until the whole subject seemed to have been exhausted, and ourselves in danger of being charged with riding a hobby. Some of these important subjects as they occur to me now, are the comparative value of soft and cohesive gold, contour fillings occupied our attention for several years, when irregularities crowded all other questions from our programmes; the cause of dental caries, dependent on chemical action attracted our attention for a while, when lo and behold the microscope of Doctor Miller brought to our notice the teeming millions of microbes and bacteria, with all their numerous relatives, which in time came in for a due share of our attention; when it dawned upon the savants, that these insidious enemies to our further success must be put to death, routed, and entirely exterminated, which has brought to our attention, and taxed to the utmost, the learned scientists of our specialty to discover the chemical, or combination of elements, heat or cold, that would accomplish the entire extermination of these infinitesimal, insidious enemies, that had for so many years stood between us and success. Thus has the question of disinfectants and antiseptics been thrust upon us, and even now occupy the attention of the

learned scientists of our specialty as witness one of the subjects on your present programme.

Now the free, full and almost exhaustive discussion of all and each of these questions in our Societies and Dental Journals has been of incalculable benefit and profit in the world of dental practice; and especially to the conscientious, industrious student of Dental literature.

In view of the fact that these important subjects have occupied the attention of the profession for so many years, and have in a measure been 'satisfactorily settled; it has occurred to me that it would be eminently proper and valuable, especially to the members of our profession in this State, that this State Society now take up with energy, and push to completion the enactment of a law by the legislature for the regulation of the practice of Dentistry in Ohio. The importance of this question is now especially brought to the attention of the people, by the unearthing and exposing by the Cincinnati *Commercial-Gazette* of the fraudulent issuing of Medical Diplomas in that city, and the action the medical profession of every school of medicine, Allopathic, Homœopathic and Eclectic have taken in the matter, suggests that this is an opportune time for this Society and the profession throughout the State to act with energy and promptness for a law regulating the practice of our specialty. As ours is the most important and perhaps the most extensively practiced of all the specialties of medicine, and perhaps more than any other by which the common people are being humbugged and injured, not excepting the mother profession itself. It is not necessary in my view of this subject that such a law should be so very lengthy and complicated, but simply providing that every person practicing Dentistry in this State shall have a diploma from some reputable Dental College of this or any other State. Such a diploma from such a school represents just so much study and careful preparation. Then every practitioner of Dentistry in this State should have a record made of such qualification in the county clerk's or recorder's office in every county where he expects to practice; I would also make it the duty of the prosecuting attorney of each county to bring suit against

any one found or known to practice in his county without such record, this would remove the objection of one Dentist informing on one practicing contrary to law, and would in a great measure put a stop to the itinerancy now so prevalent throughout the State; and also to a "green" student after taking his first course in College establishing himself in some country town and advertising as "Doctor Blank, just from—— Dental College," "all work warranted and teeth extracted without pain." Of course such a law would be incomplete without a just and suitable penalty attached.

If the straight and narrow path through the Dental College is to be the only *entree* to our profession, what! I hear you ask is to be done with our "*State Board of Examiners?*" My answer is, abolish it, it has outlived its usefulness. While it was eminently necessary and called for when organized, I can see no reason at this day why any should enter the door of our specialty by subjecting themselves to a casual examination on the general practice of dentistry and paying a fee of twenty-five dollars, while other young men, ambitious to take an honorable position in their profession spend the time necessary to complete a three years' course in a Dental College, at the expense of one thousand or twelve hundred dollars.

I am aware that some of our most excellent and honorable Dentists of today hold State certificates, but I am arguing now that from this on a diploma from some honorable, reputable Dental College should be a sufficient and the only passport to practice Dentistry; thus making the Dental College responsible if incompetent charlatans are preying on the incredulous and ignorant public. So I am opposed to the extra and expensive machinery of an Examining Board as advocated by some very eminent educators, both east and west. It is a reflection on the professors and teachers of our colleges, such incompetency, if any existed, would naturally be a proper question to come before the "National Association of Dental Colleges."

The only use then I can see for a State Board of Examiners would be to investigate the workings and methods of the Dental Colleges of our State, and to report to the proper county

officials what colleges are legitimate and what diplomas should be received for record.

I wish to mention one element that will be brought to bear on the members of the legislature against the passage of a law for the regulation of the practice of medicine that perhaps has not been considered. The traveling specialists going from one county to another, pay the county editor more for advertising one week than all the regular practitioners of his town do in five years; consequently the county papers all over the State will oppose a law that will interfere with the traveling specialist; even though he is injuring and humbugging the general public. The publishers of our city papers make more money out of a small space in the lower right hand corner of the last column of their papers for one issue in advertising "secret remedies," "Manhood, how lost, how restored," etc., than they do out of the entire profession of their city for years.

The publishers will consequently oppose any law taking away from them this patronage, so a reputable editor and publisher of an influential county paper told me.

I expect criticism, for many of the views here advanced, and that is just what is desired, and will I hope attract the attention of those more able to discuss these questions than your humble servant, and result in upholding and advancing the standard of Dental practice.

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## **The Skin and its Appendages, with Special Reference to the Development of the Teeth.**

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BY H. M. FLETCHER, D.D.S., M.D.

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Read before the Mississippi Valley Dental Association March 10, 1892.

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Mark Twain showed a good deal of knowledge and displayed a high appreciation of the extreme sensitiveness of that wonderful organ the skin, when he said he had found the best place to have a boil, and that that place was on some other fellow.

Mark had evidently either read the Book of Job, or had boils

himself; for is there a disease of any other organ of the body that can bring about so pitiable a condition as in the case of the good old man Job when he was smitten with sore boils from the sole of his foot to his crown?

The skin is truly a most wonderful organ in many ways. Through it we receive many of the impressions that enter the brain, and thus add to our experience and knowledge.

Extending over the whole surface of the body, it may be regarded as a covering for the protection of the deeper tissues.

It is flexible, pliable, and elastic.

And loosely attached to the tissues and the organs which it covers, so that it slides easily over them allowing them ready play beneath it. In many parts of the body it is underlaid with a cushion of serous or adipose tissue which contains fat, thus insuring a smoothness, plumpness, and beauty of outline for the physical form.

In the palms of the hands, the soles of the feet and the scalp, the skin is not so loosely attached however, but adheres firmly to the tissues beneath.

On the face and neck it is very loose, very flexible and pliable, as is readily seen in the manifold changes in facial expression, and in the free movements of the neck.

#### NERVE AND BLOOD SUPPLY.

It is very copiously supplied with nerve and blood vessels, and in both cases the branches which lead to the surface are from the same nerve or vessel that supplies the deeper tissues, hence an explanation of how topical application can effect a deep-seated trouble. The use of counter-irritants on the gums, "for instance," in cases of inflammation about the roots of the teeth, often effect a happy change.

The same reasoning and plan of treatment can be counted upon in almost any part of the body, but more especially the joints.

The skin is the seat of one of the most important of the five special senses, the touch. In this respect we find its highest development on the tips of the fingers and the lips. It is sur-

prising to what an extent the sense of touch can be cultivated. This is best illustrated in the case of blind persons.

Almost every one has heard of Laura Bridgman, who was deaf, dumb, and blind. She was the first person so afflicted who became thoroughly educated. The chief means of reaching her mind was through the sense of touch.

A recent example of a similar, but much more marked, character is that of Helen Kellar, of Tuscumbia, Ala.

The skin is also one of the most important excretory organs of the body, in certain senses the most important. See what it contains :

1. Tactile, or touch, corpuscles.
2. Sweat glands.
3. Sebaceous glands.
4. Papillæ of skin.
5. The hair.
6. The nails.

And it also gives origin to the teeth, and to the crystalline lens of the eye, and to the more important parts of the nerves of special sense.

The sweat glands are about 1-300 of an inch in diameter.

They are fewest in the region of the back and neck, where they number about 400 to the square inch.

In the palms and the soles there are about 3,000 to the square inch.

It is estimated that there are two and one-half millions of these sweat ducts in the skin of the whole body on an average sized man.

This system of glands and ducts constitutes the sewerage system of the surface of the body.

It is estimated that if this two and one-half million ducts were extended and placed end to end, they would constitute 50,000 feet, or over nine miles of drainage of the system through the skin.

One thirty-seventh of the carbonic acid of the body is also secreted through these glands.

The skin is also capable of performing the function of ab-

sorption. To such an extent is this true that life may be preserved, in case of serious disorders of the digestive system, by the absorption of nutriment and remedies through the skin. In this way a life may be prolonged sufficiently for the digestive system to recover and resume its work again, and thus a life be kept from going out.

In certain low forms of animal life there is no mouth or stomach, nourishment being taken wholly by absorption through the skin. This type is illustrated in the tape worm. In this case, however, the food is digested by the animal upon which the parasite lives, and is then absorbed and assimilated by the worm.

#### TISSUES DEVELOPED FROM THE SKIN.

It does not seem so impossible that one might almost have "nerves of steel" when we know that the enamel of the teeth—the hardest of all animal tissues—is developed from the skin, and at the same time the softest of all animal tissue the brain and nerves are developed from the same source.

Just see what a variety of organs we have developed from the epithelium or that organ from which is developed the outer coat of the skin, and how widely they differ in appearance and form.

The enamel of the teeth and the brain.

The crystalline lens of the eye, callous of the heel and the palms.

The nerves of special sense and the nails.

The hair which may be cut at will, and that extremely sensitive organ, the pulps of the teeth. The latter, however, are developed from a deeper portion of the skin than the others, and lastly the important parts of the sense of hearing, smelling and tasting.

#### ANATOMY.

The skin may be divided into three layers :

1. The upper or outer layer is the epithelium, cuticle, or epidermis, modifications of which form all kinds of hard, horny out-growths or appendages of both animals and plants.

2. The *rete mucosa*, or papillary layer, which contains the papillæ,—these papillæ are highly vascular and contain the touch corpuscles.

3. The *cutis vera*, or true skin, which is the foundation for the other two layers, and is composed largely of connective tissue, holding in its meshes the fat of the skin, the sweat glands, the hair follicles, and from which the pulps of the teeth are developed.

The three layers are developed originally from the epiblast and mesoblast of the blastoderm.

Here a model of the blastoderma, with its three layers was displayed, and the manner of development of the different tissues from them explained.

#### SKIN OF PLANTS COMPARED WITH THAT OF ANIMALS.

Plants have a skin comparable to that of animals. Dr. Merrill Ricketts has compared the two as follows:

"Animals and plants alike have a circulatory and a respiratory system. Animals have a two-fold advantage over plants in that they have both the lung and external covering by which the act of respiration is carried on, while the plant has but the external covering (the skin). The skin of plants does not fill as many offices as does that of animals, yet there are many functions in common, viz.: that of absorption, protection, sensation, and of respiration.

"In addition to these, it serves in animals as an organ of excretion, perspiration, and the regulation of temperature.

"Their origin, structure and development, are practically the same, both having epithelium, from which the appendages of each develop.

"There is a correspondence from the shining coat of the polyp to the thick hide of the rhinoceros. Even the loose skin called the mantle, which envelopes the body of the mollusk, corresponds to the true skin of the higher animals, but we find it more highly developed in mammals. The dermis consists of a sheet of tough elastic tissue, composed of interlacing fibres, blood vessels, lymphatics, sweat glands, and nerves. It varies in thickness from the sixtieth of an inch to three or more inches; the thickest skins of both animals and plants being found in the tropics, a very singular fact indeed, especially when considered from a protective standpoint.

“Destroy either or all of the five senses; remove if you will a lung, a kidney, the spleen or pancreas; still we find that life can be sustained indefinitely.

“Remove a branch, a leaf, a flower or a fruit, we likewise find that life is sustained.

“How different it would be if we were to divest any animal or plant of its external covering. To remove or destroy one-fifth of the dermal covering of either, would cause almost instant death.

“By dermal covering I mean the skin or external membrane of either animals or plants. Its office in each is to protect, however it varies in structure.

“In the animal it is composed essentially of an internal layer formed principally of connective tissue, and rich in vessels and nerves called, the true skin or derma, and of an external layer composed of cells only, called the epidermis.

“It contains in addition many peculiar glandular and horny organs.

“In the plant it consists of epithelial tissue, husk and bark.

“Although they vary in structure there is a similarity. That found upon animals comprises that part of the skin which is raised in a blister and called the cuticle or scurf skin.”

Many animals secrete from their skin such substances as form a means of protection for their bodies, or a house to live in, such as snails and other mollusks, the oyster and other shell-fish, and the many bright and beautiful coral.

The covering of the entire family of the crustaceans is a production of the skin, and serves the place of an internal bony skeleton such as is found in the vertebrata. This is seen in the coat of mail and the wings of insects.

The covering of all worms, whether it be the crust of the centipede, the slimy surface of the earth-worm, or the hairy coat of the caterpillar, all are variations of the epidermis.

Again, the scales of all fishes, the horny coat of the alligator, the shells of the tortoise and the armadillo, and the quills of the porcupine, are modifications of the skin.

One of the most beautiful productions of all nature is seen in

the feathers of birds. Their varieties of beauty in form and color are almost endless. Feathers, together with beaks and claws of birds, are developed from this same source. The hair and the fur, the claws and the hoofs of animals, and the hair and the nails of human beings are appendages of this wonderful organ.

And last, but not least, among the appendages of the skin are the teeth of animals—including men—(excepting certain classes of fish), the tusks of elephants and walruses are simply enlarged or elongated teeth.

In the vegetable kingdom bark is another name for the skin, the leaves of trees and plants, and, conspicuous for their fragrance and beauty, the flowers of the vegetable kingdom, tan-bark from the oak, corks from the bark of the cork-tree, canoes and other useful articles, from the bark of the birch tree,—these and others of the necessities and conveniences of life, are derived from the skin of vegetables.

“The thorn of the horny locust develops and falls off to give place to a new one, about the same process of development, or shedding, as takes place with the horns of deer and other animals. In the higher animals the epithelial scales are constantly being removed and replaced.

“In lizards and serpents the old epidermis is cast off entirely, being stripped from the head to the tail; in the toad it comes off in two pieces; in the frog in shreds; in fish and some mollusks in the form of slime.

“However modified, the epidermis or whatever its appendages, a like process of removal goes on. Animals shed their hair, horns and nails, birds their feathers, and crabs their shells.

“Desquamation, or falling off of epithelial cells, takes place throughout both kingdoms.

“Specimens of both animal and vegetable epidermis under the microscope reveal cellular structure, and their offices are the same. That portion of animal epidermis called the *rete mucosum* contains the nucleated cells and pigment or color granules on which the color of the animal depends.”

The utility to mankind of the skins of animals and plants is a

matter of experience and record from the remotest antiquity. Among barbarous and uncivilized races the skins of animals have, in large part, furnished their simple clothing, and at the same time their best protection from cold and from the constant dangers of injury from their rough surroundings. Teeth and horns of animals are used for weapons of defence and articles of adornment.

Indeed, in a sense, man's progress from barbarism to civilization is indicated largely by his skill in utilizing the pelts of animals and the fiber of the bark of plants and trees for clothing of his person and tents for his housing. Bark, fiber, wool and fur, are the materials out of which mankind first learned to make cloth, and there is no one present in this audience to-night but that is indebted to the skins of animals or plants for the clothing he or she wears. Our shoes are made of leather, and our clothing of wool, cotton, linen, or silk.

Here followed a stereoptican display of fifty lantern slides, mostly photomicrographs of the skin and its appendages, including sections of embryo chicks showing the mode of development of the epithelium.

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### Pental, the New Anæsthetic.

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BY O. N. HEISE, D. D. S., CINCINNATI, O.

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Read before the Mississippi Valley Dental Association, March 11, 1892.

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Called a new anæsthetic, is, after all, only a new name applied by Prof. J. V. Mering to Tri-methyl-Ethylene, having the chemical formula of  $C_5H_{10}$ , and is a tertiary amylene obtained by heating amylene hydrate in the presence of acids.

Pental, the present amylene, was made upon the suggestion of Prof. V. Mering by the chemical firm of C. A. Kahlbaum, in Berlin. It is a colorless liquid, of a low specific gravity [0.6783], with a boiling point of  $38^\circ$  [100.4] insoluble in water, but miscible in all proportions with alcohol, ether and chloroform, burns with a luminous flame, and is highly inflammable, is easily

inhaled without irritating the mucous membrane of the mouth and respiratory passages in the least, [being very volatile, like chloride of Ethyl it often forms small crystals of ice on the inhaling mask, but is not decomposed on exposure to light or air.] It was used to some extent during the year of 1856-57. After 1857 we have little or nothing of note to add in regard to its use as an anæsthetic; only Pfefferman refers to it in his book of 1862, entitled, "Eine Fassliche Darstellend der gesammten Zahnheilkunde." (Comprehensive Treatise of Dental Science.) In it he makes the statement, "that he has given it some thousand times," without however mentioning how and where he obtained it. Neither describing its peculiarities as an anæsthetic, or giving any of his personal experience with its use. Since there is no further notice of it to be found in any of the medical or scientific journals after the year of 1858, it is inferred that for want of a good definite chemical article, the use of it was discontinued.

Pental was first made by Cahours, by distilling amyl-alcohol with zinc chloride, which, however, yields an indifferent, indefinite compound Amylene, containing a number of foreign substances, contaminated besides with amyl-alcohol, all these products evolve dangerous suffocating vapors, with a boiling point varying from  $28^{\circ}\text{C}$  to  $75^{\circ}\text{C}$ , besides having a very bad odor, resembling that of decaying cabbage, (or cat urine). It was first described by Ballard, in the year 1844; while Snow was the first to mention its anæsthetic properties, in 1856, for the extraction of teeth, and it is a credit, for which we may well be proud, to the dental profession, that one of its members should be the first to apply it for relief of pain in the extraction of teeth. Such was not only the case with the oldest anæsthetic, namely, Nitrous Oxide, but with several of the succeeding ones, as Ether, Bromide of Ethyl, Aethyl Chloride and others, and now Pental is brought to our notice through the same source.

It not only having been first used as an anæsthetic in dental operations by Snow, in 1856, but in being again brought to the notice of the profession for that purpose, by a man foremost in our ranks, viz.: Prof. Hollænder of Halle, who is quite en-

thusiastic in regard to its use, and from whose published reports of the same in the "*Therapeutische Monatschrift*" I have taken this meagre resume. As an anæsthetic for minor operations, as well as more prolonged ones, he not only considers it quite safe, but surpassing all others. For dental operations it not only equals Nitrous Oxide in its rapidity of action and safety, but goes ahead of it in its more prolonged action, enabling us to take more time in the performance of operations, having no unpleasant side or after effects.

Narcosis is produced in a gradual way, without any untoward symptoms, the pulse rate being slightly increased in the very beginning, but soon returning to its normal state again, and having no effect on respiration. Corneal reflex being retained for a considerable time. In some cases, whether they inhale the Pental with the eyes open or shut, the pupils are either contracted or dilated, and stare at the operator with wide open eyes, without, however, being conscious or sensible to pain; and if narcosis is not too deep will open their mouths, when shut, if commanded to do so. Spasmodic contraction of muscles, as those of mastication, as observed with Nitrous Oxide or Bromide of Ethyl, are rarely if ever noticed, and if so, will soon yield by delaying the operation for a few moments. The regaining of consciousness is as gradual as is the induction of narcosis. During the anæsthesia nor after, is there any nausea, oppression of the chest or headache, but the feeling of well-being is something that astonishes us. In fact, it is related by Prof. Hollænder, "that patients who were not feeling well, or suffering with headache, and for that reason wanted to defer taking the Pental, declared after taking it that they were feeling much better, and the headache had disappeared."

The stage of exhilaration as noticed in other anæsthetics is very seldom present, but if so, is of such a pleasant nature as to induce laughter, and Hollænder states that "it could well be called Laughing Ether."

Patients can be kept under its effects for some time without any evil consequences; but for operations in the mouth and nose it must necessarily be discontinued as soon as we begin

operating; and as the sitting posture is the usual one for these operations, it is not wise or prudent to unnecessarily prolong the condition. Its effects do not seem to be lessened by frequently repeated administrations, but to the contrary, the second one is more easily induced. In the main, it may be said to differ from Chloroform, in that it acts more promptly, has no evil side or after effects. It differs from Bromide of Ethyl in that it is somewhat slower in its action, but much more lasting in its effects, and can be prolonged as it may be deemed necessary. It differs from Nitrous Oxide, in that its effects are more prolonged, and can be kept up for some time, being free from any unpleasant effects, and safe in every respect, [its safety no doubt, being due to the fact of its being free from any of the halogens.

Pental, after being taken up by the blood, is probably split up into carbonic acid gas, and  $H_2O$ , two substances (as Hollænder puts it) which can in no wise act harmfully. One of its objections might be its peculiar odor, resembling that of oil of mustard, but being so volatile, it is soon dissipated and of little consequence.

The main drawback to its general employment will be its present high price, (\$6.00 for one Kilo, 2 lbs. 8 oz.,) but with the modified Junker's Inhaler, it is stated that one Kilo, (2 lbs. 8 oz.,) is enough for about fifty administrations; some of them being more or less prolonged.

Method of administration about the same as that for Ether, or better by means of a slightly modified Junker's Inhaler. Pental being so volatile that if the ordinary methods are pursued, it takes much longer to induce the narcotic condition, for the reason that too much of it is lost, also making it more expensive. For short minor operations, as the extraction of two to four teeth, it is not necessary to bring about deep narcosis, as it produces insensibility in its very first stage. Its full anæsthetic effects are brought about in from three to five minutes, lasting four to five minutes.

As to the initial signs of Pental Anæsthesia, there are really none to be spoken of as being definite and pronounced, as there is hardly any change of expression, except the occasional stare

of the wide open eyes, the color of the face remaining the same, Corneal reflex being retained for some time. But the indifference of the patient, with the relaxation of the muscles, and the apparent resemblance to the normal sleep, are a sufficient guide to show that the patient is under its effects, and that we can safely begin with the operation without hurrying ourselves as we are obliged to do with Nitrous Oxide.

Prof. Høellnder sums up his experience with Pental as follows: "That we have in it one of the safest, surest and most pleasant anæsthetics as yet brought before the profession." Surpassing all others in his estimation, having been given many hundreds of times, even by persons not familiar with its action or influence on the system, without producing any evil consequences, and always acting satisfactorily, having had no effect on the system in regard to the production of sugar in the urine, he having paid especial attention to that point.

In conclusion, I would state, that just in proportion as we treat the mouth and teeth from a medical standpoint, and get away from the mere mechanical idea of Dentistry, and look upon the mouth as a whole, and not as composed of so many individual teeth, treating and filling a few of them and leaving the balance of the mouth in a deplorable condition, which, I am sorry to say, is so frequently done, (even by men in the front ranks of our profession) and as we come to consider the adjacent parts as rightfully belonging to our specialty, just in that proportion will we make use of anæsthetics more and more; and what a blessing to suffering humanity if the favorable reports in regard to Pental, by such eminent men as Professors Hollænder and J. V. Mering should be confirmed by others.

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#### DISCUSSION OF DR. HEISE'S PAPER ON PENTAL.

*Dr. Cassidy.*—I sincerely hope this new anæsthetic, Pental, will prove a safer and in every way a better one than those we already know. It is certainly an improvement in point of color, at least, on what was known as amylene, which was used for the same purpose some forty years ago.

According to Dr. Heise's excellent paper the formula of

Pental is  $C_5H_{10}$ , it is therefore isomeric with amylene  $C_5H_{10}$  or Isopentane; isologous with pentane  $C_5H_{12}$  and homologous with ethylene  $C_2H_4$ , the latter also known as heavy carburetted hydrogen. All these hydrocarbons are, however, regarded as being made up of groups of radicles, each radicle having its own special position in the molecule; so that compounds isomeric with each other, having the same kind and number of atoms, will differ in physical and perhaps more or less in chemical properties. For instance, amylene was prepared by the dehydrating influence of zinc chloride on amyl alcohol, or fusel oil  $C_5H_{12}O$ , and Pental it seems is obtained by the action of acids on amylene hydrate. Now, amyl alcohol and amylene hydrate have the same rude formula  $C_5H_{12}O$ , but if some of the radicles of which they are composed be placed by the simplest change possible we recognize two entirely different bodies:  $C_5H_{11}[OH]$  amyl alcohol  $C_5H_{10}[CHOH]$  amylene hydrate.

If these two alcohols be acted on by the same dehydrating agent, as either zinc chlorid, sulphuric acid, or phosphoric oxide, it is probable that a different product would in each case result. Nevertheless, I believe that pure amylene and pure pental are one and the same.

*Dr. Heise.*—How about the boiling point of amylene varying from  $32^\circ$  to  $78^\circ$ , while the boiling point of pental is constant at  $38^\circ$ ?

*Dr. Cassidy.*—That is due solely to the purity of pental. Pure amylene has, of necessity, a constant boiling point which is doubtless also  $38^\circ$ . The homologous liquid hydrocarbons increase in their boiling point by about  $30^\circ$  for every addition of  $CH_2$ , consequently if there be more or less of other closely related hydrocarbons present with the one experimented with, which is generally the case, as for instance: butylene  $C_4H_8$ , and hexylene  $C_6H_{12}$ , which are immediately above and below amylene respectively in the homologous series, I think I am justified in saying that such a mixture will accordingly vary in its boiling point. But any pure liquid free from every admixture has, as is well known, its definite boiling point as well as its definite vapor density.

The question alluded to in the paper as to the probable decomposition of pental in the animal body into  $\text{CO}_2$  and  $\text{H}_2\text{O}$ , it seems is not fully settled, but may be by careful examination of the excretions. My own humble opinion is that it does not so suffer chemical change, but on the contrary, that the action of this hydrocarbon, like those of common illuminating gas, may be more in the direction of suffocation, thus preventing the escape of the normal  $\text{CO}_2$ , and the consequent increase of the latter, the natural anæsthetic within the body, thereby obtunding the nerve centres and lessening the conductivity of the sensory nerves. However, if pental does undergo decomposition in the body, as stated, the  $\text{CO}_2$  thus formed would be retained for the time being and induce insensibility to pain much like tying a rope around a man's neck for the same purpose.

I am satisfied that any process which will develop in the body an increased quantity, or retention of  $\text{CO}_2$  as by rapid breathing, unusual excitement, or violent exercise, like playing base ball or running to a fire, will at the same time reduce our insensibility to pain. So also with  $\text{N}_2\text{O}$  which evidently acts by superseding the iron compound in carrying O to the tissues and at the same time causing therein a larger amount than usual of  $\text{CO}_2$  to be formed. The retention of the latter, the natural anæsthetic, on account of its inability to find the normal reduced iron oxide, and thus escape the usual way, as ferrous carbonate through the venous circulation, seems to me to be the ultimate cause of the anæsthesia rather than by the immediate influence of the  $\text{N}_2\text{O}$ .

It is not finding fault with pental to assume that it does not undergo decomposition when inhaled, in fact it is otherwise; for if chemical changes take place by the union of its radicals with radicles other than O, there is no telling what complications might result under certain conditions.

The paper states that pental is formulated as tri-methyl ethylene  $\text{CH}_3 \text{CH}_3 = \text{C} = \text{CH}-\text{CH}_3$ .

This is, of course, the possible arrangement of the radicles in each molecule, which may be decided later on by stereo-chemistry; but with all respect to the essayist I will say, that taking

the peculiar odor of pental into the question might it not be more truthfully and simply formulated as consisting of the direct union of the two hydro-carbon radicles allyl  $C_3H_5$  and ethyl  $C_2H_5 = C_3H_5 - C_2H_5$ , inasmuch as allyl is the characteristic hydro-carbon radicle of mustard oil.

I wish to congratulate Dr. Heise for thus introducing this new anæsthetic to us, and say that on account of its high price it will not be, at least for the present, within the reach of advertising dentists.

*Dr. J. Taft.*—Is there any probability of the cost in its manufacture being reduced.

*Dr. Cassidy.*—I do not see why it should not be made at greatly cheaper rates. The olefines can be formed in various ways; by abstraction of the elements of water, by dehydrating agents from amyl alcohol, or fusel oil, which is quite cheap you know, or from its homologous alcohols, and by decomposition of petroleum compounds, which exist in illimitable quantities in mother earth. If the demand so justifies a comparatively cheap process of manufacture will doubtless be discovered.

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### Decolorization of the Teeth.

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BY A. O. RAWLS, D. D. S., LEXINGTON, KY.

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Read before the Mississippi Valley Dental Association, March 11th, 1892.

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By way of trying to add my mite to the general fund of experience given those present, I wish to say a very few words upon the subject of colorization, and dis or de-colorization of the dentine and enamel, wherein for the treatment of pulpless teeth, such antiseptics, stimulants, and germicides are used, the properties of which are known to produce a change of color in the tooth substance with which it comes in contact.

It is of common experience with the older practitioners and generally so with those of these latter days, that all preparations of Iodine soluble by contact or mixture with the fluids of tooth substance will change the color of those fluids. It is also known,

or should be, that any preparation soluble or insoluble, in the nutrient fluids common to tooth substance will if pumped or even placed, in a fluid state in the crown cavity and root canal of a tooth, voided by hot air, Spunk, Bibulous paper, Alcohol or Ether, of a portion of its fluid contents, will most certainly presume to occupy the vacant space, and if of any marked difference in color from the tooth, will of necessity refract or reflect the same to observing eyes.

Terchloride of Iodine and Pyoktanin will each show their color in and throughout the tooth substance when used as above. Pyoktanin will show itself either blue or yellow, in accordance with which one of the preparations is used ; no matter whether the tooth is anhydrous, only partly so, or deluged with saliva, mucus, or what not ; it will fly apparently like the flash of strongest affinity, and we can hardly determine its bounds until we see its own definition. Such being the fact in so far as Pyoktanin is concerned, and partly, so far as the coloring properties of terchloride of iodine obtain, these articles would seem objectionable as remedial agents in the treatment of sepsis of tooth substance—objectionable only on account of their properties to maintain their color or change into that more objectionable.

Now let us see if we can remedy this. In trying I only give you my experience.

First. The pulp cavity and root canal being freed of its former occupants, and you opine from the character of the latter that the dentine needs throughout its open aspect germicidal treatment ; then dry fairly well (not too dry nor too hot, for too much heat unbalances structure other than the germs,) the root canal ; introduce upon the extreme point of a broach, touched in any of the volatile substances used in dentistry, a bit of, say Pyoktanin not larger than half a mustard seed, as near as possible to the apex of the root ; stop the crown cavity, either loosely or tight, as the conditions require. In a few hours the discoloration will appear, this you wish to rid the tooth of, remove the stopping, fill the apex of the root with cotton and some resinous solution, and you can by the use of alcohol, a very dilute solution, in water of carbolic acid, or any of the hydrocarbons suitable for

use, wash out with broach and cotton saturated with either all discolorization. If upon the other hand, you find that the dentine is fresh, clean and free from septic contact, and you wish only to treat an open wound at the end of the root, and wish to use in such treatment either one of the discoloring agents, and at the same time not discolor the tooth crown, then dry the crown cavity and root canal thoroughly, stop the end of the root temporarily, and while the tooth is dry and warm pump into the crown and root canal carbolated ethereal solution of Gum Copal or Sandarac, let this dry, remove the temporary stopping at end of root, and proceed with treatment for root membrane, periosteum and nerve tissue at end of root.

The very natural tendency of Pyoktanin is when stopped up in a tooth, to pass out when it meets moisture, therefore it would proceed in the direction of the cementum, and through it to the peridental membrane, and be lost in the circulation; but the animal fluids escaping from the cementum are slow to reach the crown of the tooth, and ere long become clogged up so that moisture cannot pass and carry back the substance of discoloration, hence it is better to wash it out before stopping the crown cavity. In some cases, pulpless teeth thus treated will if thoroughly freed from the stain of Pyoktanin, improve in color, becoming lighter and clearer. In choice of color I prefer the yellow preparation of E Mercks.

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### Permanent Closure of the Jaws, With Report of a Case.

BY WM. KNIGHT, M.D., D.D.S., PROF. OF ANATOMY AND ORAL SURGERY.

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Read before the Mississippi Valley Association of Dental Surgeons,  
March 10, 1892.

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The boundaries of the mouth consist of a very dilatable sac, lined by an elastic mucous membrane. Thus the walls of the cavity are prevented from being unduly stretched, or lapsing into folds when the mouth is closed. Of course any cause that may destroy any part of this lining membrane will interfere with its movements in proportion to the injury sustained. A mucous

membrane, after recovering from an injury or ulcerative disease, is much more liable to the so-called secondary cicatrix—atrophy, than is the skin of the body. This atrophy is slow but irresistible in its progress, even when but small portions of the mucous membrane have been destroyed, there follows gradual but complete immobility of the jaws. Prof. Esmarch, in his valuable essay upon the subject, says: “Injuries to the mucous membrane of the cheek damage the mobility of the lower jaws in a greater or less degree by their cicatrizations, as is well known, and the cause of this ankylosis of the lower jaw, is often thought to be a growing together of the inner surface of the cheek with the bones or gums; this is not a correct view, however, and has in many cases led to improper treatment.”

Permanent closure of the jaws is the result of many affections of the *Temporo-Maxillary* joints. It may be due to a severe sprain or concussion or arthritic inflammation, leading to a deposition of plastic matter and the conversion of this substance into cellulo-fibrous cartilaginous or osseous tissue. Again, permanent closure of the jaws may follow the *exanthemata*, as in the case of scarlet fever, reported by Dr. Mass, of Breslau; or be caused by pressure of a tumour in the parotid region, making a direct pressure upon the *temporo-maxillary* joint. Immobility of the jaw is occasioned in rare instances by an osseous bridge extending from the lower to the upper jaw or from the lower jaw to the temporal bone. Dr. Samuel Gross, writing upon this subject, says: “However induced, the effect is not only inconvenient, seriously interfering with mastication and articulation, but it is often followed, especially if it occur early in life, by a stunted development of the jaw, exhibiting itself in marked shortening of the chin and in an oblique direction of the front teeth.” The treatment of this distressing condition has been until recent years most unsatisfactory. In cases of immobility from cicatricial tissue, experience has amply proved the utter uselessness of excising the constricted parts and resorting to after dilatation. Dr. Gross, noticing this, says: “When the immobility depends upon the presence of inodular tissue, the proper remedy is excision of the offending substance, an opera-

tion which is both tedious, painful and bloody, and unfortunately not followed by any but the most transient relief, owing to the tendency in the parts to reproduce the adhesions, however carefully and thoroughly they may have been removed. During my residence in Kentucky, I had a large share of such cases and although I never failed to make the most thorough work—not infrequently repeating the operation several times, at intervals of a few months—it is my duty to state that few of them were permanently relieved. After the excision is effected, the patient must make constant use of the wedge, wearing it for months and years, so as to counteract the tendency to reclosure”. Prof. Esmarch, who has a large experience in these cases, writes as follows; “All the hitherto received methods, such as freeing or cutting through of the cicatrix from the mouth—the separation of the whole cheek—in order to accomplish this perfectly, the extirpation of the mass of cicatrix—the application of mechanical apparatus in order to drag the jaws asunder by degrees, and so can only be of avail in those cases where in some angle or other, there is found a remnant of mucous membrane. If one succeeds after separation of the cicatrix in preventing, by the application of mechanical means for a long time, the cicatrization in the undesirable direction—the contraction will take place in another direction and by degrees will drag the remnant of mucous membrane up to the skin. In every case, it takes years before such methods can be properly estimated; for, as far as is known, the secondary shrinking of a cicatrix takes place very late, even after complete or sufficient healing over has occurred. Putting aside the more favorable cases, there still remains a number of patients of this kind, in whom the usual methods produce no lasting cure, just because there is no more old mucous membrane left; and for these cases, I recommend the formation of an artificial joint in front of the contractions in order to give, at least the other half of the jaw some, although a limited motion, and so to lessen considerably the sufferings of these unfortunate patients.” The suggestion of Prof. Esmarch, to form an artificial joint in front of the contraction has been productive of much good. Previously to this time, Dieffenbach had recommended,

as well as tried, the formation of an artificial joint, but behind the contraction, and naturally without any good result; since the impediment to motion lies more forward and thus is not removed. This proposal of Prof. Esmarch to form a false joint in front of the cicatrix, was suggested to him by a case, which came under his care in 1854, in which considerable destruction of the cheek and contraction of the cicatrix had occurred, together with immobility of the jaw and necrosis of a portion of it. The necrosis was fortunately in front of the cicatrix. The bone having been removed, it was found that mobility was restored and a useful amount of movement obtained. Dr. Mitchell Henry was the first, to put Esmarch's suggestion into practice, his patient, however, dying from Pyæmia.

Christopher Heath, F. R. C. S., has since had several successful cases, so this operation is now an established one in surgery.

The operation suggested by Prof. Esmarch is especially indicated where only one side of the jaw is affected usually securing to the patient a useful, though one sided movement of the bone. Various modifications of this operation have since been devised and applied by different surgeons to suit special cases, and thus many persons afflicted with closure of the jaws have been relieved.

In order to give relief in cases of ankylosis due to destructive disease of the tempero-maxillary articulation, our treatment must be directed with the aim of securing a false joint, or joints in cases of double ankylosis, through some point of the ramus and not as some operators have done, in front of the masseter. This is sufficient to liberate the body of the bone so as to enable the patient to open the mouth, but the hand has to be brought into use in the act of masticating. If the immobility be due to fibrous adhesions formed between the condyle and glenoid cavity, the method as practiced by Mr. Spenton of dividing the adhesions with the tenomy knife is to be recommended. In cases of rheumatoid arthritis in which the suffering is great, as well as in cases of osseous ankylosis of the tempero-maxillary joint, excision of the condyle seems to offer the best means of giving relief. The operation through the ramus above the angle appears to me

to be the most suitable in all cases of double ankylosis, not of rheumatic origin. Our aim being, in removing a small wedge of bone to establish an artificial joint; should the result prove successful, all of the muscles of mastication excepting the external Ptyregoid, have their functions retained to the benefit of the patient.

Rokitansky describes the unnatural joints resulting from fracture as of two kinds, "one, more or less resembling a synarthrosis, the other, like a diarthrosis and accordingly, in its proper sense, a new joint. In the former case, the fractured ends of the bone are held together by a ligamentous tissue; either a disc of ligament, the thickness of which may vary, is interposed between them and allows of but little movement, or as occurs when there has been loss of substance from injury, absorption of fractured ends or otherwise—ligamentous bands connect the fragments and allow them to move freely on each other. The connecting tissue appears to be nothing more than the intermediate substance which has failed to become transformed into secondary callus and remains in its first state. In the second case, a ligamentous articular capsule is formed and is lined by a smooth membrane which secretes synovia.

The fractured surfaces adapt themselves to each other and become covered with a layer of tissue which is fibro-ligamentous or more or less fibro-cartilagenous. They may articulate immediately with one another or may have between them an intervening layer of ligament which corresponds to an articular cartilage and their movement upon each other is more or less free according to the size of the articular capsule and the form of the articulatory surfaces. These last are sometimes horizontal and smooth. They glide over each other and allow of restricted motion; sometimes one surface becomes convex and the other concave; sometimes both are rounded off and lying within a capacious capsule far apart; they come in contact only during particular movements. The articulating capsule is the product of the inflammation of the soft parts; the cartilaginous formed layer, which covers the ends of the bone is secondary callus, arrested in its metamorphosis and converted into a fibrous tissue. The

other ligamentous cords which are sometimes present and the structure resembling an interarticulating cartilage are remnants of the intermediate substance. Both forms of new joint, but more particularly the synarthrodial form have an analogue in the lateral new joints sometimes formed between the masses of callus thrown around two adjoining bones."

Having thus reviewed the different modes of operating for permanent closure of the jaws, and the manner in which movement may be secured, I would like to read to you a case which has been brought before the Faculty of the Ohio College of Dental Surgery, in which the members during the past session, have shown great interest. I submit the entire case, as well as the details of the treatment to your criticism, while the patient herself is present for examination.

On September 30, 1891, Barbary Engel, aged eighteen, called at the consulting rooms, having been sent by Dr. H. A. Smith. An examination showed a pitiful condition of the mouth. There was no movement whatever in the lower jaw. The gums were swollen, red, soft, and bled upon the slightest touch; some of the incisors had been extracted but the remaining teeth, part of which were in a decayed condition, were firmly locked, and crowded one another from their normal position. From this miserable condition, she pleaded earnestly to be relieved. She has a clear, healthy complexion, a good development of head, bright, intelligent looking blue eyes. These characteristics give expression to a face, that owing to a marked recession of the chin, attending upon arrested development of the lower jaw, would otherwise have the stamp of idiocy.

At the age of three years she had a fall upon the chin, which was succeeded by swelling about the face and gradual tightening of the jaw, until complete closure ensued. From this time the jaw has remained immovable. Her nourishment, necessarily consisted entirely of liquids, to which most likely the clearness of her complexion is due.

Within the last fourteen years several attempts by different surgeons were made, under chloroform, to force open the mouth but without success, still, I thought something more should be

attempted to relieve her sufferings. The various operations by which this condition may be remedied were carefully considered, and the one selected was, if possible, to form artificial joints above the angles on both sides of the lower jaw. The danger attending this and the uncertainty of success were explained to the patient as well as to her friends. The only promise given, being that in case of failing to liberate the jaw, we would extract the teeth.

On October 9th, assisted by Drs. H. A. Smith, H. Cundell-Juler, F. Kebler, H. C. Matlack, as well as the internes Drs. Newton and Scofield, in the presence of the Faculty and students of the Ohio College of Dental Surgery, the operation on the right side of the lower jaw was made. The incision passed below the ear along the posterior border of the Ramus to near the angle of the Maxilla; the anterior surface, as well as the border of the Ramus were then cleared of soft parts by the Periosteum and handle of the scapel, sufficiently to readily admit into the wound a small movable back saw; the bone was then carefully sawn through, the direction being obliquely upward from about a quarter of an inch above the angle. The attempt to remove a wedged-shaped piece of bone from the upper fragment with the saw, was not entirely successful, but with the aid of the bone cutting forceps and also the chisel and mallet, it was removed in small pieces. The hemorrhage throughout the operation was slight. The dental artery, by forcing and holding for a few seconds a small plug of soft wood into its canal, ceased bleeding. The soft parts were brought together and the wound dressed with iodoform. After the patient had been removed to her room, she did well; during the first forty-eight hours there was a slight rise of temperature and for a few days a little swelling of the neck as well as a difficulty in swallowing, but there was no movement of the jaw gained by this operation. The difficulty in swallowing was most likely due to the injury done to some of the fibres of the superior constrictor, as the attachment of this muscle to the jaw was involved in the portion of bone removed. The patient left the hospital on the eighth day after the operation.

The patient was again admitted to the hospital on October the 20th, and on the 23d was brought before the students of the Ohio College of Dental Surgery. An operation upon the left side of the jaw was then made, Drs. H. A. Smith, P. S. Connor, H. Cundell-Juler, Grant Mollyneaux and H. C. Matlack assisting. The operation in character was similar to the previous one and so liberated the jaw as to enable Dr. Mollyneaux to extract several badly decayed teeth that had caused the patient much suffering. From this operation, the symptoms were more pronounced, not only was the temperature higher but the swelling of the neck and the difficulty in swallowing were more severe; but these symptoms subsided after the third day. On the second day after the operation she was asked to protrude her tongue. To her surprise and great joy she found that she was able to do so. "Oh!" she exclaimed, "I can put my tongue out, I can put it out!" This organ, however, was very small being apparently arrested in its development from want of use; similarly as the inferior maxilla had been. Not an uninteresting feature in this case was the rapidity of growth which took place in her tongue, for within a week after she had first protruded this organ, it had gained double its size.

On the fourth day, Dr. Mollyneaux, assisted by Dr. G. C. Minturn, succeeded in obtaining, under chloroform inhalation, an impression of the interior of the mouth. The molar teeth were lying horizontally with the crowns facing the tongue, but with the use of mouth washes, first containing permanganate of potash, and later one more astringent containing tincture of hydrastis with chlorate of potash, her mouth was relieved of its foul condition and became clean and sweet. The gums and oral mucous membrane assumed a firm and healthy appearance. From the impression made of her mouth, silver shields were applied which have assisted in maintaining the movement which has been gained. Her speech, which before the operation was muffled, became clear and distinct. Her condition was thus decidedly improved, although but slight movement of the jaw had been gained. She left the hospital on the eighth day quite well, with the exception of a little healthy pus oozing from the wound on either side.

For some time subsequently, the patient was daily under my observation. Within a week of leaving the hospital, she was able to chew bread and eggs, and finally on November 9, 1891, for the first time since she was three years old, she was able to eat meat; a quail contributing to her meal.

The movement in her jaw is an up and down movement only, no lateral movement whatever being present. It is evident that in this case a double synarthrodial joint has been established. It would have been more satisfactory to have secured a double arthrodial joint.

There is not more than an eighth of an inch movement in the molar region, but this to the patient is valuable. The scars upon the face are not very noticeable and will become less so in time. The present condition of the patient is good, as the gentlemen present can see.

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### **Surgery of the Antrum.**

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BY G. S. JUNKERMAN, M.D., D.D.S.

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This paper has nothing new to offer on the subject of the Antrum. It trusts rather to its kind reception before this Society on a weakness of human nature, viz.: that we always like to hear something that we know already; we like to discover that we know something that somebody else considers worthy of study.

The Antrum is only one of the air cells of the skull, and since it is of importance as the largest of these, it is known by the dignified title of the Antrum of Highmore. It like the other air cells of the skull, is lined by the Schneiderian membrane. It is of significance to the oral surgeon because it comes within his jurisdiction to treat its diseases, and it is the only air cavity that bears any relationship with the teeth. The Antrum is located mainly within the superior maxillary bone, but its walls are completed only by the addition of the inferior turbinated, lachrymal and palate bones, which bones are interested in forming most of its nasal wall. It is triangular of shape with its apex pointing to the canine fossa. The base looks backward

toward the palate. The other walls look respectively toward the nasal fossa, the orbit and the palatine process of the superior maxillary bone. If this cavity has any function I think it differs somewhat from the function of the remaining air cells of the head, viz.: to warm the air before it passes to the lungs. In order to maintain the contour of the face nature has combined in this bone by the formation of this air cavity both lightness of weight and extent of surface. She has furnished an ample frame for the face and yet retained the balance of weight in the poise of the head. If the cavity were solid bone tissue it would make a remarkable difference in the weight of the head. There is another feature of importance which is the better maintenance of blood supply to the face, and of direct importance to the dental surgeon in that by the presence of this cavity a freer supply of blood and nerve force to the molars and pre-molars is maintained. All diseases of this cavity would be treated surgically. Yet we would not wish to magnify the importance of the diseases connected with it. It is subject to about the same diseases that may affect any other mucous membrane. Add to this the fact of its being a cavity of some obscurity and rather restricted walls, and we have in view all the obstacles with which we have to contend in diagnosis and treatment. As a matter of fact it may be stated that any Antral disease attains importance not as regards the Antrum itself, but as the progress of the disease affects the surrounding tissues. In most cases while the disease is confined to its own walls there is little or no inconvenience to the patient; but should it press upward the orbital cavity is invaded. If the disease should extend at the expense of the inner wall of the cavity the nasal fossa would be invaded, and should the floor of the cavity give way the mouth would be associated with the disease. A forward projection of the disease would involve the face. From this we find that the oral orbital and the nasal cavities are not only liable to be connected in disease with the Antrum, but owing to the thinness of the partition walls between these cavities they are very easily invaded.

For purpose of diagnosis and treatment of any disease of the Antrum, access to the cavity must be gained. There are three

ways of entering the Antrum. There are two ways practical to the oral surgeon and both of these are by way of the mouth. These are by way of the canine fossa, which is a little depression just posterior to the root of the superior canine; and by way of the Alveolar cavities of the pre-molars and molars. The third entrance is by way of the middle meatus of the nasal fossa. This in reality, is the only entrance which in the recent state is open. The dental surgeon who is not equipped with instruments for treatment through this opening had better restrict himself to the other means of egress. Entrance should be gained into the Antrum by way of the canine fossa when the apex of the cavity can be definitely located. The disease may indicate the position of this opening, and under the circumstances you are perfectly justified in performing with a steel instrument and enlarging the opening to a convenient size. This is especially indicated if the teeth are all present and found to be intact. Engorgement of the Antrum characterized by facial tumor is the indication for this plan of procedure. Where facial tumor is not present there is no absolute rule by which you can reach the Antrum through the canine fossa. The development of the Antrum is so variable that it can not be perfectly determined just how far forward the cavity is developed. It may be as far forward as the canine or no farther than the first molar. There is little risk in forcing entrance through the palatine root of the second molar; and this means should always be resorted to if possible. Facial tumor and preservation of the teeth would indicate the canine fossa operation. The alveolar operations are preferable in all cases where the preservation of the teeth is not concerned. It would be of no purpose to enumerate the various diseases which may afflict the Antrum and indicate their treatment. These points of information may be gained by consulting any chapter on mucous membranes and their diseases. With the Antrum the diseases are complicated by their being confined to a cavity. Free and open drainage for the cavity is the first principle of treatment; antisepsis the other principle of treatment.

The operator is frequently brought in contact with the Antrum accidentally in the process of the extraction of teeth.

This may occur by the forcing of the root into the Antral cavity, thereby fracturing the alveolar wall; or by tearing away part of the floor of the Antrum with the root of the tooth. Either case is liable to produce a complication in the form of troublesome inflammation. The former mishap would necessitate the enlarging of the opening made, and a removal, if possible, of the foreign body. If this could not be accomplished the opening should be enlarged to give the products of inflammation a chance to expel it. There are, no doubt, many obscure pains, especially of a neuralgic nature about the head and face that arise from Antral trouble, and a small amount of surgical interference will often relieve a seeming severe complication.

There are diseases of the Antrum that are brought by association with the other air cavities, amenable to treatment through the nasal opening of the Antrum, but these are not in the field of the oral surgeon.

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DISCUSSION ON DR. G. S. JUNKERMAN'S PAPER.

*Dr. Wm. Knight.*—The essayist has read an interesting paper on a very interesting subject. As far as its anatomy is concerned, in addition to the antrum being like the ordinary air cells of the head, its purpose seems to me to add largely to the resisting power of the upper maxillary bone. It is a well-known fact in mechanics that, the same quantity of material being used, a hollow cylinder is much stronger than a solid one, and this seems to be one purpose for the superior maxillary bone being hollow, to meet the resistance of the lower jaw.

The mucous membrane lining the antrum is in some sense more subject to disease than the neighboring nasal mucous membrane; it is exposed to the ordinary influences of disease, likewise subject to injury from decayed roots of teeth opening into the cavity.

As regards the affections to which this cavity is liable, Empyema is the most frequent, and this affection does not produce expansion of the walls, except in serious and prolonged cases; it is more readily recognized by deep-seated pain referred to the upper part of the cheek, and by occasional discharges from the

corresponding side of the nose, and from a peculiar odor noticeable only to the patient, but not to his friends. A cystic disease, however, is more prone to cause absorption of the walls, and consequently gives rise to the characteristic parchment or crackling sounds upon pressure.

Another class of diseases to which this cavity is subject, is the malignant tumors, especially the small round cell sarcoma, which originate so frequently in this cavity, and which is brought under the attention of the dental surgeon in its early stages more frequently than the general surgeon, who is apt to see it later, when remedial measures are well nigh useless, as instanced in a case during last August, in which I removed a superior maxillary bone for sarcoma, which had originated in the antrum, but had expanded the walls of this cavity, and forced itself into the surrounding tissues, but after removal it returned again in a very short time.

The need of early diagnosis in all diseases of the antrum is of great import to the sufferer, as many of these cases have gone on for years without relief. The diagnosis is more easily arrived at from exclusion than from any positive symptoms; and in all cases in which the diagnosis has been obtained, treatment should be instituted; and the first object is to obtain an entrance into the cavity; this is best effected through the anterior wall of the antrum, unless there be decayed teeth which can be extracted and an entrance then gained through the alveolus of the extracted tooth or teeth; however entrance may be gained, the cavity should be washed out in cases of Empyema with warm fluids containing mucilaginous or mild astringents. A good method of washing the cavities is by the Eustachian catheter, with a small rubber tube at the end, and this attached to the nasal douche, which will force the fluid into the nose. Of course in discovering any foreign body or growth, Papilloma or otherwise, the removal of this would be incumbent.

*Dr. Jay.*—I think the paper an excellent one, and very much to the purpose, also the remarks of Dr. Knight. I recollect extracting the fang of the first bicuspid from the jaw of a lady; she bled more freely from the nose than from the cavity where the tooth came out.

*Dr. Smith.*—A case reported for advice. It was something like this: In the extraction of the superior molar the root was broken, and in the attempt to remove it, it was forced into the antrum; the case was neglected for a few weeks, and the patient acquired the habit of taking water into the mouth and permitting it to pass out through the nose. Another annoyance was that water and fluids taken with meals would in part pass through the opening in the alveoli, into the antrum and out through the nose. I was consulted as to what could be done. I suggested that an attempt be made to recover the broken tooth. Have any gentlemen anything to say in regard to this particular case?

*Dr. Knight.*—If the opening is of sufficient size I would suggest the insertion of a small probe to see if the root could not be recovered, and then close up the opening into the antrum so that food and liquids could not enter from the mouth.

*Dr. Junkerman.*—I think in all cases where these accidents occur, and they do occur occasionally, if the roots are left in, they will at times become a source of trouble, and chances are they will do harm at some time. A bullet shot into the tissues may become encisted, but we get no encistment of tooth roots. If the antrum is larger than the root forced into it, and if the roots are ragged or rough, you are more likely to have trouble than if they are smooth. In regard to this case, if the cavity of the antrum be small there will probably be no trouble. If the cavity is large, the change of position, etc., will cause an irritation that will give considerable trouble, and the root will have to be removed. Of course, we should always get rid of this root if possible.

*Dr. Smith.*—During the washing of this cavity what assurance has the operator that the root has not floated out? There are certain instruments for the removal of roots, but none in my judgment suitable.

*Dr. Fletcher* also spoke of a case he had had quite recently, in which the odor was perceptible to the patient, but he was unable to detect it.

## A New Oxyphosphate for Crown Setting.

BY W. B. AMES, D.D.S., CHICAGO, ILLS.

Read before the Mississippi Valley Dental Association, March 9, 1892.

There are few, if any, processes in which chemistry is applied of which the knowledge is more empirical than of the various cement formations.

The best authors do not attempt to give any definite information on the various mortars and hydraulic cements, and Oxychloride of Zinc is dismissed with the statement that the ingredients form a cement much used by dentists in the filling of cavities of teeth. Of Oxy-phosphate of Zinc I have never been able to find a reference in any work on general chemistry.

Of the various oxy-phosphates offered for sale I am of the opinion, after examining a considerable number of them, that oxide of zinc is the basis and cement ingredient, other materials, such as silica alumina or magnesia in combination, acting only as modifiers of the plasticity before setting, and the hardness after setting, and do not enter into the crystallization.

After an extensive series of carefully recorded experiments I have arrived at the conclusion that a very limited number of the metallic oxides have the property of forming a cement in combination with phosphoric acid and water. The oxides of zinc, copper and mercury only have this property according to experiments.

The salts of mercury being so very potent for evil, as well as good, render the oxides of this metal undesirable as ingredients of cements to be used in the mouth, so that the only practical addition that I have been able to make through my experiments to the cement family, is the higher oxide of copper. Of copper oxides we have the cuprous or red, and the cupric or black. The red cuprous oxide of copper forms a cement with phosphoric acid and water that has good working qualities, but shrinks badly in setting, lacks strength, and becomes friable with crystallization.

The black cuprous oxide of copper forms with phosphoric acid and water, in proper proportions, a cement which has desirable working qualities, and a hardness and stability after crystallization which gives promise of its being a valuable addition to our list of materials for use in filling cavities, and the attachments of crowns and bridges. The most valuable property is the ability to use a large proportion of oxide in the mixture without hurrying the crystallization of the mass. With an unusually large proportion of oxide the crystallization is sufficiently slow to allow of thorough mixing and deliberate handling while filling a cavity, or setting a crown or bridge. It is peculiar in that it retains its plasticity for an unusually long time upon a cold glass slab, but crystallizes rapidly under the effects of the warmth of the body. While it gives plenty of time for manipulation, it hardens rapidly after the process has once commenced, and is harder in a few minutes after being placed in the mouth than is usual with oxy-phosphate of zinc. The crystallization of this cement, when the proper proportion of ingredients has been used, seems to be more perfect than any of the zinc oxide cements that I have ever seen. There is a flint-like hardness such as I have never met with in any other oxy-phosphates.

If a pure oxide is used, free of metallic copper, there is no staining of the tooth material from impregnation. If metallic copper be present there is a gradual discoloration, similar to that from impregnation of the tooth material from some amalgams.

There is, undoubtedly, a powerful antiseptic influence exerted by the cement while in the plastic state, as there is a small amount of phosphate of copper formed during the mixing, which is soluble in the free phosphoric acid of the plastic cement, but insoluble in the saliva after the crystallization has taken place. While the cement is hardening there is a distinct copper salt taste, which disappears when the crystallization is complete. This is analogous to the astringent acid taste from fresh oxy-phosphate of zinc fillings, which comes from the phosphate of zinc formed in the combination. Hot phosphoric acid will dissolve a considerable amount of the metallic oxides, and a small amount is always dissolved in the cold state. The practical application

of this is, that the use of the oxide of a metal whose salts are highly antiseptic insures a considerable antiseptic influence from the cement. In as much as phosphoric acid attacks the more electro positive metals readily, it is naturally suggested that we should be careful about using an unplated steel spatula in the mixing of oxy-phosphates. If the phosphoric acid solution contains the proper proportion of water for best crystallization with the oxide used, this proportion may be modified to a detrimental extent by the combination of a portion of the acid with the metal of the spatula. A spatula of some of the more negative metals, or a steel spatula plated with negative metal is a more sensible instrument to use than one of steel only. The ivory spatula I would not consider as preferable to steel, but one of wood might in this connection be practicable, but for many reasons is inferior to thoroughly plated steel. A three inch druggist's spatula immersed in a strong solution of sulphate of copper, will become coated or plated with copper in such a manner as to make it a practical spatula for mixing this cement. This spatula should not be used for mixing any white cement as it is difficult to so thoroughly remove the black cement, that the other will not receive a decided tinge of the color. A glass slab from four to six inches square should be used.

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DISCUSSION ON DR. AMES' PAPER.

Questions asked.

Q. Will it retain a polished surface?

A. It takes a glossy surface. Its main disadvantage is in the color, yet it does not stain the tooth.

Q. What other points in its favor?

A. It has the advantage of remaining plastic on a cold slab for a long time, giving plenty of time to the operator, in fact, my assistant often has the cement ready before I begin to work; after it gets the influence of the warmth of the mouth, it begins to crystallize and sets quickly.

Q. Is there any difference in mixing it?

A. Make it stiff.

Q. Does it mix as hard as cement?

A. About the same. You can mix it stiffer because it does not set so quickly on the slab. If mixed thin it does not set as hard.

Q. Is it adhesive?

A. It is very adhesive.

Q. Is it an irritant?

A. Not more so than Oxyphosphate of Zinc, as the only irritant is the phosphoric acid used.

*Dr. Cassidy.*—It seems to me that this material is not a true chemical compound.

*Dr. Ames.*—I do not profess to say anything about the chemical part; it is my opinion that the phosphate of copper on account of its antiseptic properties should have the preference.

*Dr. Heise.*—Is this acted upon by the saliva, and does it stain the tooth?

*Dr. Ames.*—It is insoluble in the saliva. If the pure black oxide of copper is used there is no discoloration. I make use of it for filling children's teeth. Of course the black shows through the thin walls of the enamel, but where the pure oxide is used it does not discolor the tooth.

*Dr. Morrison.* Have you experimented or produced any mixture to get rid of the color? For instance, mixing both oxide of copper and oxide of zinc with the phosphoric acid.

A. The difficulty is that each oxide requires a different consistency of phosphoric acid, but this might be found out by experience. This cement requires a larger proportion of water than any other I have ever seen, and this indicates that we obtain more perfect crystallization and consequently a more enduring filling. We would not get the best working qualities of either if used in combination, on account of the difference of specific gravity and crystallization of the phosphoric acid.

*Dr. Morrison.*—I have had trouble with ordinary cement getting hard while being mixed. What is the cause of this?

*Dr. Ames.*—Too much water in the acid.

*Dr. Smith.*—Dr. Jay has asked the question as to what cement is the best. Who knows much about it? A certain doctor told me this last summer that he made very enduring cement fillings,

and I asked him how he did it, he said by taking care of the material, and through this precaution he obtained the best results. I think, however, that Dr. Taft put the matter about right when he once said that "the best oxyphosphate filling is only a poor filling." We deceive our patients unless we tell them the true character of this filling. I would like to know of a good cement.

*Dr. Wright.*—Dr. Smith's remarks are rather discouraging; it seems to me that Dr. Ames has made a step in advance in this direction.

*Dr. Smith.*—It is a mistake to think that I was saying anything against Dr. Ames. His material is new, and I have not yet tested it. I have great respect for Dr. Ames' ability, and admire the interest he has manifested in this direction, and hope that he will yet discover some combination that will make a permanent filling of good color.

*Dr. Ames.*—I look forward to great improvements in cement fillings over anything we now have; there is a very great difference in what I have found in the results obtained. I have used this cement with better results than I have ever obtained from any other. It makes a much more enduring filling than oxyphosphate of zinc; where the phosphate fillings have stood only six months, fillings of this cement in the same mouth have stood for one and a half years. It withstands mastication better than oxyphosphate and has better edge strength. Its greatest advantage is in setting crowns, bridges, etc.

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### President's Address.

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L. E. CUSTER, D.D.S., DAYTON, O.

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Read before the Mississippi Valley Dental Association March 9, 1892.

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This society meets to-day for the forty-ninth time. Properly speaking this is the forty-eighth annual session, and two years hence will have rounded out half a century of usefulness of one of the oldest dental societies in existence.

National, State and local societies have sprung up in her territory and divided the interest, but she still exists, and on account

of her age, the good she has done, and the good she is still doing, she will live for years to come.

It is unnecessary to recall her history, and the few words in the way of an address will be concerning the fiftieth anniversary of the society in 1894.

There is a general impression that it should be celebrated in a befitting manner. We would not expect this to be a national meeting, but one characterized by a large attendance of dentists from the original territory comprised by the society, and the attendance of many of those who were once members, but have since become associated elsewhere. Some may question so early an agitation of this movement, but the reader having just participated in the preparations for this meeting has a vivid impression of the importance of an early beginning in the preparations for any dental meeting.

These preparations should be begun early for many reasons. There is a peculiar interest and fascination shown where large numbers of people come together. The farmer attends the fair and circus as much for the bustle as for the peanuts and lemonade. We instinctively "follow the crowd," and when we are assured there will be a big dental meeting we always attend.

In order to invite attendance, the program must not only be good, but must be announced beforehand, to do which requires time. The movement of all committees is slow, and it requires time to arrange a definite plan of action. It requires time to secure good papers, and it is always difficult to obtain clinics and other attractive features. A good paper cannot be prepared in a day or a week, and it requires time to perfect an appliance. Many men have ideas and crude appliances, which may be completed for a coming meeting.

A society cannot expect to be well attended which sends out its program a week before the time. To have a meeting and program announced a year previous indicates that the preparations have not only been perfected, but that each one who participates will come well prepared.

Besides the early preparation of a program for any dental meeting, the proposed anniversary of this society comes at a time

when the interest will be divided with another important meeting—the Columbian—and it behooves us to early look to the interests of this society. I do not mean to detract from the Columbian Dental Congress, for we are all interested in its success, but on account of that meeting it will be more difficult to secure a good program, and so if this is to be a success we must be at work. Let the interest in this society increase. Let next year's meeting be a better one than this year's, and awaken a general interest in preparation for the anniversary.

We should begin the work for another reason. There is no doubt but that the World's Columbian Dental Meeting will be the best meeting we will have the opportunity of attending for some time, and the success of that meeting will make it all the more difficult to secure a good meeting of the Mississippi Valley Dental Society. The brilliancy of the Columbian meeting will outshine any similar effort following in so short a time. If it were possible it would be well for this society to take an active part in the Columbian meeting by way of presenting statistics, the literature which has developed from it, models of the most important appliances which were first shown here, and all the marked improvements in dentistry which emanated from this society.

A few suggestions might be offered regarding the anniversary of this society itself, if it be decided to have such.

Let the presiding officer be one of the few patriarchs remaining whose very name will insure success. Let there be a short history gleaned from the minutes of the work done, a short report of the literature, a similar report of instruments and methods presented here. Then a program of new papers, and by all means a good number of clinics. These papers may be presented by men of known reputation, and from a distance, and the discussions opened by competent persons, if we find it to be a success in this meeting, which we will now proceed to.

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#### DISCUSSION ON PRESIDENT'S ADDRESS.

*Dr. J. Taft.*—I think that the paper or address read by Dr. Custer, our President, should be discussed, as there are many points of interest in it.

Dr. M. H. Fletcher then spoke of the Columbian meeting, and of the object of the committee, which seems to be to gather together some of the points spoken of by the President, he then read the list of questions sent out to be answered by the State Committees for the Columbian Dental Congress.

*Dr. J. Taft.*—I might refer to what has been done in this work, the committee was appointed one year and a half ago, for the purpose of enlisting the interest of the profession throughout the United States, and obtaining a promise from them to attend that meeting and do whatever each could for its interest. A committee has been organized in every State and Territory in the Union, with perhaps one or two exceptions, in which I presume the persons addressed were absent, for this purpose. The question very naturally arose, what shall this committee do? The questions indicate the line of work in which these committees are at work. It is gratifying to know there is emulation among these committees. The object is two-fold. One is to arrive at the present status of the profession, if these questions are answered correctly, it will give us the correct data. The other is, it will give us the opportunity to gather together material for a History of Dentistry throughout the country better than has ever been before. The opportunity now occurs, and it is well that it should be taken advantage of. The question was then asked: "What shall be done with all this mass of material when brought together?" These committees consist of from four to seven persons. The Chairman of each committee assigns a certain district to each of the members, which he is to work up, and in which he is to ascertain the facts that will answer these questions, that is to be sent into the Secretary of the Committee. This you see, will bring together a large mass of material, so that it will not be long before matter will have accumulated which will afford material for the preparation of a History of Dentistry superior to anything heretofore obtained. At the last meeting in Chicago, a committee was appointed to revise and bring it together in the proper form for publication. A synopsis will be given at the Columbian Dental Congress, which will give an account of the present status.

*Dr. Fletcher.*—There is material here in the records of this Society for a very interesting report, this being the oldest Society in operation in this part of the country.

*Dr. C. M. Wright.*—If I understand the address of the President correctly, it was that we, as an individual society should do something—have a small fireworks of our own— to celebrate our semi-centennial anniversary ; while this might be a good plan for the Columbian meeting, which we are all interested in, it seems necessary that we should do something for our own meeting.

*Dr. Fletcher.*—I fully coincide with the suggestions of the President, as well as those of Dr. Wright.

*Dr. H. A. Smith.*—Dr. Fletcher's remarks that we have in this town some very old literature relating to the formation of this Society, I fully agree with, there are some very interesting facts connected with the organization of this Society.

*Dr. Jay.*—I have some very old literature in regard to the formation of Dental Associations, I do not know if I have anything in regard to the Mississippi Valley Association, but if I have, will be glad to contribute it.

Dr. Fletcher moved that a committee be appointed to take this matter in hand and gather all the material possible to make this history complete. Committee appointed: Drs. Fletcher, Taft and Wright.

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### The World's Columbian Dental Congress.

At the annual meeting of the Southern Dental Association held in Atlanta, July, 1890, action was taken looking to the organization of a great meeting of the dental profession to be held in Chicago, in 1893, and after due deliberation it was decided to appoint from that body five persons to act in conjunction with a like number that might be appointed by the American Dental Association. At the meeting of the latter body at Excelsior Springs in August following, the action of the Southern Association was approved, their recommendation adopted, and five from that body were appointed who should co-operate with the committee above referred to. These two committees were authorized

to add to their number from one to five persons, as they might see fit. This afterwards resulted in the selection of five persons, additional, making the Executive Committee to consist of fifteen persons. This committee so constituted was given full power to take such action as in its judgment it may deem best for creating an organization for the purpose of holding a Dental Congress in Chicago, in 1893, which the reputable dentists throughout the world shall be invited to attend, and that any action that this committee may take in the premises shall be final and binding.

The following named persons constitute this general Executive Committee, viz.: From the Southern: L. D. Carpenter, Atlanta, Ga.; J. Y. Crawford, Nashville, Tenn.; W. J. Barton, Paris, Texas; J. Taft, Cincinnati, Ohio; and C. S. Stockton, Newark, N. J. From the American: L. D. Shepard, Boston, Mass.; W. W. Walker, New York City; A. O. Hunt, Iowa City, Iowa; H. B. Noble, Washington, D. C.; and Geo. W. McElhaney, Columbus, Ga.

Then selected by these: J. C. Storey, Dallas, Texas; M. W. Foster, Baltimore, Md.; A. W. Harlan and John S. Marshall, of Chicago, Ills.; and H. J. McKellops, St. Louis, Mo.

This General Executive Committee has held a number of meetings for the purpose of arranging the work of this Congress, which has resulted thus far in the appointment of twenty-four committees, who are to have in charge the preparation and carrying out of the various branches or departments of the work of the Congress. Below will be found a list of these committees:

This list of committees will give some idea of the intended scope of the work. Doubtless other committees will be added as the work develops.

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#### COMMITTEES AS APPOINTED AND CONFIRMED TO DATE.

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##### GENERAL EXECUTIVE COMMITTEE.

Chairman—Dr W W Walker, 67 W. 9th St., N. Y. City;  
Secretary—Dr A O Hunt, Iowa City, Iowa; Treasurer—Dr John S Marshall, 9 Jackson St., Chicago, Ill.; Dr W J Barton, Paris, Texas; Dr L D Carpenter, Atlanta, Ga.; Dr J Y Craw-

ford, Nashville, Tenn.; Dr M W Foster, 9 Franklin St., Baltimore, Md.; Dr A W Harlan, 70 Dearborn St., Chicago, Ill.; Dr H J McKellops, 2630 Washington Ave., St. Louis, Mo.; Dr G W McElhaney, Columbus, Ga.; Dr H B Noble, N. Y. Ave., Washington, D. C.; Dr John C Storey, Dallas, Texas; Dr C S Stockton, Newark, N. J.; Dr L D Shepard, 330 Dartmouth St., Boston, Mass.; Dr J Taft, 7th St., Cincinnati, Ohio.

COMMITTEE OF CONFERENCE FOR WORLD'S CONGRESS AUXILIARY.

W D Miller, Berlin, Germany; F Busch, Berlin, Germany; Thos W Evans, Paris, France; E Magitot, Paris, France; G W Sparrock, Lima, Peru; W B Macleod, Edinburg, Scotland; A W W Baker, Dublin, Ireland; Ernest Sjoborg, Stockholm, Sweden; Charles S. Tones, London, England; W H Coffin, London, England; W Geo Beers, Montreal, Canada; H C Edwards, Madrid, Spain; E Lecaudy, Paris, France; J G Van-Martin, Rome, Italy; Plattschick, Pavia, Italy; Joseph Arkovy, Buda Pesth, Hungary; C Redard, Geneva, Switzerland; W H Morgan, Nashville, Tenn.; W H Dwinelle, New York City; R B Winder, Baltimore, Md.; Elisha G Tucker, Boston, Mass.; W W H Thackston, Sarmville, Va.; J B Rich, Washington, D. C.; J D White, Philadelphia, Pa.; W H Eames, St. Louis, Mo.; J B Patrick, Charleston, S. C.; F J S Gorgas, Baltimore, Md.; G V Black, Jacksonville, Ill.; R Finlay Hunt, Washington, D. C.; E Bacon, Portland, Maine; Benjamin Lord, New York City, N. Y.; A L Northrop, New York City; W W Allport, Chicago, Ill.; W W Walker, New York City; L D Carpenter, Atlanta, Ga.; J Y Crawford, Nashville, Tenn.; W J Barton, Paris, Tex.; J Taft, Cincinnati, O.; C S Stockton, Newark, N. J.; L D Shepard, Boston, Mass.; H J McKellops, St. Louis, Mo.; A O Hunt, Iowa City, Iowa; H B Noble, Washington, D. C.; Geo W McElhaney, Columbus, Ga.; J C Storey, Dallas, Tex.; M W Foster, Baltimore, Md.; A W Harlan, Chicago, Ill.; J S Marshall, Chicago, Ill.

Committee No. 1. GENERAL FINANCE COMMITTEE.

Chairman—L D Shepard, 330 Dartmouth St., Boston, Mass.; T W Brophy, 96 State St., Chicago, Ill.; A L Northrop, New York City.

## Committee No. 2.

## PROGRAMME COMMITTEE—NOT APPOINTED.

## Committee No. 3. COMMITTEE ON EXHIBITS.

Chairman—Charles Pruyn, 70 Dearborn St., Chicago, Ill.; Arthur E Matteson, 3700 Cottage Grove Ave., Chicago, Ill.; E M S Fernandez, 103 State St., Chicago, Ill.

## Committee No. 4.

## COMMITTEE ON TRANSPORTATION.

Chairman—F H Gardiner, 126 State St., Chicago; V H Jackson, 240 Lenox Avenue, New York City; Geo Eubank, Birmingham, Ala.

## Committee No. 5. COMMITTEE ON RECEPTION.

Chairman—W W Allport, 9 Jackson St., Chicago; W W H Thackston, Farmville, Va.; E M S Fernandez, 103 State St., Chicago; Geo A Christmann, Staats Zeitung Building, Chicago; Jas McManus, 32 Pratt St., Hartford, Conn.; Elisha G Tucker, Boston, Mass.; J D Thomas, 912 Walnut St., Philadelphia, Pa.; H J McKellops, 2630 Washington Av., St. Louis; L L Dunbar, 500 Sutter St., San Francisco, Cal.; V E Turner, Raleigh, N. C.; Joseph Bauer, 130 Esplanade St., New Orleans, La.; J F P Hudson, 19 West 39th St., New York City; W P Dickinson, 608½ Nicollett Ave., Minneapolis, Minn.; C F W Holbrook, 34 Park St., Newark, N. J.; W J Foster, 9 West Franklin St., Baltimore, Md.; R M Sanger, East Orange, N. J.

## Committee No. 6.

## COMMITTEE ON REGISTRATION.

Chairman—Fred A Levy, 343 Main St., Orange, New Jersey; E L Clifford, 401 West Monroe St., Chicago, Ill.; Geo N West, 34 Monroe St., Chicago, Ill.; J Y Crawford, Nashville, Tenn.; C V Rosser, Atlanta, Ga.; T L James, Fairfield, Iowa; W H Fundenburgh, 323 Pennsylvania Avenue, Pittsburg.

## Committee No. 7.

## COMMITTEE ON PRINTING TRANSACTIONS—NOT APPOINTED.

## Committee No. 8.

## COMMITTEE ON CONFERENCE WITH STATE AND LOCAL SOCIETIES.

Chairman—J Taft, Cincinnati, Ohio.

## LIST OF STATE COMMITTEES.

*Alabama*—E S Chisholm, Tuscaloosa, Chairman; A Eubank, Birmingham; Chas P Robinson, Mobile; G M Rousseau, Montgomery.

*Alaska*—————

*Arizona*—L N Goodrich, Phoenix, Chairman; D Pentland, Prescott; J Hardy, Phoenix; W Warnekross, Tombstone.

*Arkansas*—M C Marshall, Little Rock, Chairman; W B Pollard, Hot Springs; L K Land, Pine Bluff; R D Seals, Fort Smith; A E Kimmons, Fort Smith.

*California*—C L Goddard, San Francisco, Chairman; W J Younger, San Francisco; E L Townsend, Los Angeles.

*Colorado*—P T Smith, Denver, Chairman; W E Griswold, Denver; H P Kelly, Denver; R B Weiser, Georgetown.

*Connecticut*—E S Gaylord, New Haven, Chairman; Jas McManus, Hartford; R W Browne, New London.

*Delaware*—T H Gilpin, Middleton, Chairman; C R Jefferis, Wilmington.

*District of Columbia*—Henry C Thompson, Washington, Chairman; R B Donaldson; J Hall Lewis; L C F Hugo; H M Schooley.

*Florida*—J N Jones, Jacksonville, Chairman; James Chace, Ocala; Duff Post, Tampa; I J Welch, Pensacola.

*Georgia*—S B Barfield, Macon, Chairman; John H Coyle, Thomasville; H H Johnson, Macon; W C Wardlaw, Augusta.

*Idaho*—E L P Ector, Moscow, Chairman; John H McCallie, Moscow; A Boston, Lewiston.

*Illinois*—W H Taggart, Freeport, Chairman; C N Johnson, Chicago; J J Jennelle, Cairo.

*Indiana*—J B Morrison, Indianapolis, Chairman; P G C Hunt, Indianapolis; S B Browne, Fort Wayne.

*Indian Territory*—

*Iowa*—C B Peterson, Dubuque, Chairman; S C Hatch, Sioux City; L K Fullerton, Waterloo.

*Kansas*—L C Wasson, Topeka, Chairman; C E Esterley, Lawrence; Wm H Schulze, Atchison.

*Kentucky*—C G Edwards, Louisville, Chairman; Chas E Dunn, Louisville; F Peabody, Louisville.

*Louisiana*—C E Kells, Jr., New Orleans, Chairman; Joseph Bauer, New Orleans; Andrew G Friederichs, New Orleans.

*Maine*—D W Fellows, Portland, Chairman; Edmund C. Bryant, Pittsfield; Henry A Kelly, Portland.

*Maryland*—E P Keech, Baltimore, Chairman; A J Volck, Baltimore; Edward Nelson, Frederick.

*Massachusetts*—D M Clapp, Boston, Chairman; W H Potter, Secretary; Eugene H Smith, Boston; L D Shepard, Boston; S G Stevens, Boston; D B Ingalls, Clinton; R R Andrews, Cambridge; Geo A Maxfield, Holyoke; James H Daly, Boston.

*Michigan*—C S Case, Jackson, Chairman; Geo L Field, Detroit; F L Owen, Grand Rapids.

*Minnesota*—T E Weeks, Minneapolis, Chairman; M G. Jenison, Minneapolis; C H Robison, Wabasha.

*Mississippi*—Morgan Adams, Sardis, Chairman; R K Luckie, Holly Springs; J D Miles, Vicksburg; G B Clements, Macon.

*Missouri*—C L Hungerford, Kansas City, Chairman; A H Fuller, St. Louis; J D Patterson, Kansas City.

*Montana*—C S Whitney, Miles City.

*Nebraska*—H T King, Fremont, Chairman; A W Nason, Omaha; H C Miller, Grand Island; H J. Cole, Norfolk; I W Funck, Beatrice.

*Nevada*—A Chapman, Virginia City, Chairman; M A Greenlaw, Reno; S S Southworth, Carson City.

*New Hampshire*—C W Clements, Manchester, Chairman; G A Young, Concord; Wm Jarvis, Claremont; W R Blackstone, Manchester; C H Havward, Peterborough; B C Russell, Keene.

*New Jersey*—S C G Watkins, Mont Clair, Chairman; B F Luckey, Paterson; R M Sanger, E. Orange; Charles A Meeker, Newark.

*New Mexico*—

*New York*—John I Hart, New York City, Chairman; K C Gibson, New York; W Carr, New York; M L Chaim, New York; Chas Butler, Buffalo; F A Remington, New York.

*North Carolina*—V E Turner, Raleigh, Chairman; J H Durham, Wilmington; J F Griffith, Salisbury.

*North Dakota*—S J Hill, Fargo, Chairman; S P Johnson, Grand Forks; W O DePuy, Bismarck; H S Sowles, Wahpeton; E M Pierce, Hillsboro.

*Ohio*—D R Jennings, Cleveland, Chairman; H F Harvey, Cleveland; M H Fletcher, Cincinnati; L E Custer, Dayton; A F Emminger, Columbus.

*Oklahoma Territory*—D A Peoples, Guthrie, Chairman; G F Dean, Oklahoma City; J S Nickolson, El Reno.

*Oregon*—S J Barber, Portland, Chairman; E G Clark, Portland; J R Cardwell, Portland.

*Pennsylvania*—L A Faught, Philadelphia, Chairman; C S Beck, Wilkesbarre; J A Libbey, Pittsburg.

*Rhode Island*—

*South Carolina*—Thos T Moore, Columbia, Chairman; W S Brown, Charleston; A P Johnstone, Anderson; B H Teague, Aiken.

*South Dakota*—O M Huestis, Aberdeen, Chairman; C W Stutenroth, Watertown; F W Blomily, Sioux Falls.

*Tennessee*—H W Morgan, Nashville, Chairman; B S Byrnes, Memphis; W H Richards, Knoxville; H E Beach, Clarksville.

*Texas*—W R Clifton, Waco, Chairman; G M Patton, Galves-

ton; Tom Robinson, Houston; Geo S Staples, Sherman; T L Westerfield, Dallas; H J McBride, Tyler.

*Utah*—A S Chapman, Salt Lake City, Chairman; A B Dunford, Salt Lake; F W Baker, Ogden.

*Vermont*—G F Cheney, St. Johnsbury, Chairman; Thomas Mound, Rutland; R M Chase, Bethel.

*Virginia*—J Hall Moore, Richmond, Chairman; W W H Thackston, Farmville; Jos R Woodley, Norfolk; E P Beadles, Danville; T H Parramore, Hampton; D W Rust, Alexander.

*Washington*—W E Burkhardt, Tacoma, Chairman; F P Hicks, Tacoma; J C Grasse, Seattle.

*West Virginia*—H H Harrison, Wheeling, Chairman; Jno H McClure, Wheeling; H K Jones, Parkersburg; George I Keener, Grafton; J N Mahan, Charleston.

*Wisconsin*—B G Marcklein, Milwaukee, Chairman; C C Chittenden, Madison; George H McCausey, Janesville.

*Wyoming*—Waiting for nominations.

Committee No. 9.

COMMITTEE ON THE HISTORY OF DENTAL LEGISLATION IN THIS AND OTHER COUNTRIES.

Chairman—William Carr, New York City, N. Y.; Paul Du Bois, 2 Rue d'Amsterdam, Paris; F Busch, Berlin, Germany; J H Mummery, London, England; M Etcheperaborda, Buenos Ayres, South America.

Committee No. 10. AUDITING COMMITTEE.

Chairman—L D Shepard, Boston, Mass.; R R Andrews, Cambridge, Mass.; Chas A Meeker, Newark, N. J.

Committee No. 11. COMMITTEE ON INVITATION.

Chairman—W C Barrett, 208 Franklin St., Buffalo, N. Y.; E T Darby, 1513 Walnut St., Philadelphia, Pa.; S G Perry, 46 West 37th St., New York City; W C Wardlaw, Augusta, Ga.; S W Dennis, 81 Flood Building, San Francisco, Cal.; J D Patterson, Kansas City, Mo.

Committee No. 12.

COMMITTEE ON MEMBERSHIP.

Chairman—Edmund Noyes, 65 Randolph St., Chicago, Ill.; B F Luckey, Paterson, N. J.; E S Chisholm, Tuscaloosa, Alabama; C M Bailey, 28 Syndicate Block, Minneapolis, Minn.; Dan'l N McQuillen, 1628 Chestnut St., Philadelphia, Pa.

Committee No. 13.

COMMITTEE ON EDUCATION AND LITERARY EXHIBITS.

Chairman—J J R Patrick, Belleville, Ill.; J Y Crawford,

Nashville, Tenn.; A H Fuller, 2602 Locust St., St. Louis, Mo.; C A Brackett, 102 Truro St., Newport, R. I.; B H Catching, Atlanta, Ga.

Committee No. 14.

COMMITTEE ON CLINICS IN OPERATIVE DENTISTRY AND ORAL SURGERY.

Chairman—C F W Bodecker, 60 East 58 St., New York City; S C G Watkins, Montclair, N. J.; John S Marshall, 9 Jackson St., Chicago, Ill.; Arthur B Freeman, 325 West Madison St., Chicago, Ill.; H H Schumann, 240 Wabash Ave., Chicago, Ill.; Henry W Morgan, Nashville, Tenn.; William Crenshaw, Atlanta, Ga.

Committee No. 15.

COMMITTEE ON PROSTHETIC DENTISTRY.

Chairman—S H Guilford, Philadelphia, Pa.; L P Haskell, 211 Wabash Ave., Chicago, Ill.; A P Johnstone, Anderson, South Carolina; W N Morrison, St. Louis, Mo.; Fred C Barlow, 646 Jersey Ave., Jersey City; J Hall Lewis, 1309 F St., N. W., Washington, D. C.; A O Hunt, Iowa City, Iowa; R R Freeman, Nashville, Tenn.; E S Gaylord, New Haven, Conn.

Committee No. 16.

LOCAL COMMITTEE OF ARRANGEMENTS.

Chairman—E S Talbot, 125 State St., Chicago, Ill.; F H Gardiner, 126 State St., Chicago, Ill.; C N Johnson, Opera House Building, Chicago, Ill.; D B Freeman, 4000 Drexel Boulevard, Chicago, Ill.; H J McKellops, 2630 Washington Ave., St. Louis, Mo.

Committee No. 17. COMMITTEE ON ESSAYS.

Chairman—E C Kirk, Philadelphia, Pa.; J W Wassall, Chicago, Ill.; A H Thompson, Topeka, Kansas; H H Johnson, 26 2d St., Macon, Ga.; L G Noel, Nashville, Tenn.

Committee No. 18.

COMMITTEE ON HISTORY OF DENTISTRY IN THE UNITED STATES.

Chairman—J Taft, Cincinnati, Ohio; Louis Jack, 1315 Locust St., Philadelphia, Pa.; F T VanWort, Brooklyn, N. Y.; F J S Gorgas, Baltimore, Md.; H L McKellops, 632 Sutter St., San Francisco, Cal.; E G Betty, Cincinnati, Ohio; J B Patrick, Charleston, South Carolina.

## Committee No. 19.

## ON NOMENCLATURE—NOT APPOINTED.

## Committee No. 20.

## COMMITTEE TO PROMOTE THE APPOINTMENT OF DENTAL SURGEONS IN THE ARMIES AND NAVIES OF THE WORLD.

Chairman—M W Foster, Baltimore; B Holly Smith, Baltimore; Geo Cunningham, Cambridge, England; De Gallippe, Paris; Adolph Weil, Munich; Jno E Gievers, Amsterdam, Holland; E DeTrey, Vevey, Switzerland; A Szigmondy, Vienna; O Mela, Geneva, Italy; V Haderup, Copenhagen; O J Chruschew, St. Petersburg, Russia; Alex McG Denham, Monjitas 68½, Chili; Geo B Newland, 107 Calle Florida, Buenos Ayres.

## Committee No. 21.

## COMMITTEE ON CARE OF THE TEETH OF THE POOR.

Chairman—W J Barton, Paris, Texas; C A Brackett, Newport, R. I.; T D Ingersoll, Erie, Pa.; W M Fisher, Dundee, Scotland.

## Committee No. 22.

## COMMITTEE ON BIOLOGY AND BACTERIOLOGY.

Chairman—R R Andrews, Cambridge, Mass.; M H Fletcher, Cincinnati, Ohio; W X Sudduth, Minneapolis, Minn.; W D Miller, Berlin, Germany; J H Mummery, London, England; D E Caush, Brighton, England; E Magitot, Paris, France; M Morgensten, Baden Baden, Germany; Geo S Allan, New York City, N. Y.

## Committee No. 23. COMMITTEE ON PRIZE ESSAYS.

Chairman—Theo Stanley, Kansas City, Mo.; C S Stockton, Newark, N. J.

## Committee No. 24. EDITORIAL COMMITTEE.

Chairman—W W Walker, New York City; A O Hunt, Iowa City; L D Shepard, Boston; J Taft, Cincinnati; J S Marshall, Chicago.

## Committee No. 25. NOMINATING COMMITTEE.

Chairman—W W Walker, New York City; A W Harlan, Chicago, Ill.; John S. Marshall, Chicago, Ill.

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## EDITORIAL.

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### **The Seventh District Dental Society of Ohio.**

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The next regular meeting of this society, embracing the southwestern portion of the State, will be held at Washington C. H., Tuesday, May 17th, beginning at ten o'clock A. M. and continuing through the day.

The committee having this matter in charge are making special effort for a good meeting, and it is hoped there will be a large attendance. This is a point easily accessible to all the counties embraced in this society. Let every member use his best effort to induce every one possible from his own locality to be present, and let us have an interesting and profitable meeting. It is here suggested that each and every one start in time to be on hand at the opening of the meeting, even if they leave home the evening before, and let every one go prepared to add his part to the interest and profit of the occasion, either prepare a paper or make some brief notes of cases, modes of practice, etc., that may elicit discussion, and let every one have more or less of communication for the question box, which has been a feature of this society, and let every one, so far as possible, bring any interesting appliance, instrument, material, etc., that may be worth attention. The dentist very frequently has something of this kind, which though very valuable to him, he may think would not be new and interesting to others; in this, however, very frequently we are mistaken for in many such cases these things are new and interesting to a large number. A minute description of modes of practice is frequently found of great value. It is hoped that each member and visitor may have something of this kind to present on this occasion. So, come one, come all.

### Died.

Dr. Jos. G. Cameron, in the 65th year of his age, on March 5, 1892.

The death of this worthy member of the Dental Profession of this city (Cincinnati), removes from us one of our oldest members, and the longest in practice of any now practicing in this city. He was one of the last of that group of men who did so much by their skill as expert workmen in gold and silver, by utilizing their handicraft in producing fine specimens of gold plate work to replace the lost teeth; and he added improvements in the structure of plates by adding the beautiful rims around the plates, giving at once a finish to a gold plate that marked it as a work of skill and admired by all at our convention in days long ago. He was ever ready to appreciate and adopt everything that was valuable to the profession, evincing a warm and active interest in Dental College affairs. He was for many years a Trustee, Treasurer and Secretary of the Ohio College. He was comparatively young, dying at the age of sixty-five, his death perhaps hastened from an accident in his practice by wounding his finger with an excavator, causing blood poisoning. He recovered but the attack left him feeble, and he succumbed to a cold and pneumonia, which at last ended his long and laborious life. He enjoyed a large practice so long as he was able to attend to it, and is missed by a large clientele. He was an honest man, retiring in his disposition yet active in all matters pertaining to the profession, and was considerate and kind to every member of the profession, ever ready and pleased to give any information to younger members when desired; and we, who have known him many years, feel that we have lost a friend of the profession, a man that did much to elevate the standard in his special department of Dental Art. As a citizen he was esteemed; and as a Christian he was beloved by the church of his choice in which he had been an officer over 30 years.

To his bereaved wife and family in their great sorrow we tender our deep sympathy; and may the memory of his beautiful life be cherished and imitated by his sons he loved and has left.

Signed.

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| DR. JAMES LESLIE,   | } Committee. |
| DR. J. S. CASSIDY,  |              |
| DR. M. H. FLETCHER. |              |

# THE DENTAL REGISTER.

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VOL. XLVI.]

MAY, 1892.

[No. 5.]

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## COMMUNICATIONS.

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### Discretion in the Performance of Dental Operations.

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BY F. W. SAGE, D.D.S., CINCINNATI, O.

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Read before the Mississippi Valley Dental Society March 10th, 1892.

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A professor in a certain dental college once said before his class that a man is rather likely to discover after ten years of practice that he knows nothing about dentistry. This statement if accepted literally might well discourage the beginner. We take it however to signify that the accumulated experiences of ten years of practice bring a man to a point of view from which he very likely discovers that he has not always performed operations intelligently; that is, with regard for or knowledge of their probable outcome.

It is a singular fact that notwithstanding the experiences of those who have preceded us, in any walk of life, may have been precisely the experiences which we come later to recognize as our own, most of us need to stumble and flounder and find out for ourselves before we arrive at the point of deriving practical benefit from the suggestions of those who tried to warn us. So much unconsciously escapes the memory of even the most devoted reader of standard text-books. So much which on the printed page appears plain and simple enough, becomes complicated and perplexing when it confronts the student later in his every day practice, that the wonder is that any but the most talented achieve even partial success. The tyro is from the very first skeptical as regards the statement that theory and practice are at all widely separated from each other. He cannot comprehend how it should be probable or possible to stumble in the performance, after a clear elucidation of the principles upon

which any operation or course of treatment is to be performed or carried out. He is not even aware of the difficulties which have beset his instructors in determining which text-books are best adapted to the purpose of fully enlightening him. He is not conscious how futile would be his own unaided efforts to select among various text-books the particular one best calculated to yield him the information he needs. It is only after years of practice whereby he becomes practically familiar with the subjects of which they treat, that he acquires that facility in criticising which enables him on turning over those books to discover that a text-book clear, explicit, and thorough as to necessary details, is not always to be found in his collection. Here he discovers something implied, there something to be supplied, both of which quite escaped his notice in his earlier reading. He went out from the dental college, as he supposed, thoroughly equipped for practice, and now after ten years of practice he returns to his text-books to discover a thousand things written between the lines of which he had never dreamed.

But after all, give a young man of studious habits, quick apprehension, and added to these, as by no means least in importance, a retentive memory, and it ought not to be recorded of him after he has had ten years of practice that he knows nothing of dentistry. His experience ought, during that time, to have been valuable to him, chiefly as illustrations to impress still more firmly what he had learned from his reading, not as instruments for the correction of mistaken apprehensions. But precisely here the difficulty arises, to-wit: that in the beginning the student does not know, nor does his instructor know infallibly, what it is that he most needs to know. Still more obvious is it that many fail to seize upon and improve by the teaching of the passing experience, so that being forewarned they may be forearmed against a repetition of an error. Instead of sitting down to patiently consider the cause and source of their error, they pass it by as something not likely soon to recur in practice, promising later when leisure affords the opportunity to give it proper attention. To men of this temperament the convenient time never comes, and they fall into the train of the non-progressive.

Discretion in the performance of operations in dental practice may be an inherent trait of character in the less skilled dentist, whereby he becomes practically equal in ability to another of finer manipulative attainments, but of uncultured or hasty judgment. Defects of judgment are more likely to characterize the man of an imitative mind than one of an inventive turn, for the inventive mind is constantly inquiring as to the why and wherefore, whereas the imitative mind turning instinctively to familiar methods, is constrained to make the best of those methods, even though a glimmering suspicion of their inadequacy awakens distrust. No other resources present. But a broader view of means possible of acquirement opens before the man of inventive resources. Conscious of his latent powers he boldly announces "I will find a more effective way," where the mere imitator shrinks from considering a probable failure, and takes refuge behind the plea that no other method than the one commonly approved is at his command. The disposition to ask of himself "Why may not I find a better way" marks in the dentist a degree of mental alertness which is a kind of guarantee of his avoiding error. It is, of course, not a positive check against error, because the principle upon which he projects his invention may, after all, fail. Still, the constitution of such a mind is sure to be such as to detect flaws, if they exist, in current methods, and in this alone is an important element of progress. If the man occasionally makes a mistake, the sum of all his errors is likely to be more than offset by the aggregate of instances in which he points out in advance the false premises upon which others project vaunted inventions of appliances or methods of practice. He is not usually one to endorse a method or appliance on the word of another, nor is he, on the other hand, one of the many who decry without sufficient reasons a half-tried appliance or method.

But while there is, and must be, differences in gifts whereby ends are to be attained, there need be inferiority on the part of no one of intelligence in clearly recognizing conditions calling for specified courses of procedure in given cases. The ability to pause and thoughtfully consider, to forecast the probable out-

come of an operation, to estimate the patients' ability to bear it, ought to appear in the case of any and all dentists of ten years' experience.

The extension of his influence in the community, his hold upon the confidence of his patients, the widening of the field of his practice, in short, the measure of his success in coming years depends not merely upon the dentist's manipulative skill, but far more upon the careful cultivation of his judgment as to what to do and what to leave undone, for in this age of fierce competition no man holds an undisputed field; family is linked to family among his patrons and he who through heedlessness makes a serious error may never learn the full extent of its adverse influence.

We hold then that the first requisite to the cultivation of proper habits of discretion in dental practice is a certain degree of incredulity as regards what one hears or reads. The more thoroughly honest at heart a man is the more particularly he needs to avoid the danger of accepting plausible statements from the platform and in the pages of dental journals. Not all of us are so constantly mindful as is the sagacious editor of the fallacies which are liable to characterize the writings of those who contribute to the journals, or we might be led as they are, to question their being duly accredited and responsible messengers of truth. Not that we bring any harsh accusations against the body of contributors, presumably as honest in their motives as we ourselves are: but access to the journals is easy, perhaps too easy, and some who write are too well satisfied with the achievement of having written at all to exercise a severely critical faculty in reviewing their finished work. The time is no doubt near at hand when all this will be changed, for with the accession of more liberally educated men to the ranks of the profession the number of able writers will be vastly multiplied; the dental journal will no longer consent to serve skim-milk when an abundance of cream is to be had, and only carefully revised productions, sound in doctrine and calculated to edify will be accepted for publication. But at the present time some of our journals, aye, and some of our text books too, need to be read

with a critical regard for the vanities and other petty foibles of authors who in the heat of composition forget accuracy, explicitness and fidelity to recognized principles.

Well do we need to bear in mind the legend, "Observe, compare, reflect, record."

There are many enthusiasts in the dental profession, men who though not exactly "swept to and fro by every wind of doctrine," are still not sufficiently self-contained, not sufficiently well poised to escape the infection of half-matured ideas and suggestions coming from unsanctioned authorities. The danger has been clearly recognized and provided against by an undertaking to sift out the kernels of wheat from the chaff and republish what is really valuable in the form of a compendium. While this is probably not intended as an affront to the intelligence of the mass of the profession, many there are who will elect to do their own winnowing, either through distrusting the ability of any one to select for them, or through a feeling that there is a certain advantage to be derived from considering the obvious errors of those whose contributions would be certain of being rejected from the compendium. Nor is this last consideration one to be lightly set aside, for a view of error is essential to stimulate progress, to provoke inquiry, to suggest improvement. Still the fact remains that he who compiles a compendium does so in the capacity of an editor and fulfills an important office in bringing to the attention of some who will not read widely what is passing in the world of dental letters. The product of his labor still remains amenable to the injunction to "observe, compare, reflect, record."

From this general view of our subject we come now to a practical consideration of the things which either contribute to the dentist's success in his profession or lead the way to his failure. Discretion in the performance of dental operations implies an intimate knowledge of the patient's health, temperament, daily habits of life, and many other things which come to the attention of the thoughtful observer. We premise that the dentist building up a practice needs to remember that one failure advertises him unfavorably in undue proportion to a dozen successful

operations. He needs constantly to bear in mind that his patronage is not to be solely from those who come and go and never return, but from those who are almost sure to return with fillings lost, plates broken, and new decays. He needs to be impressed with the importance of foreseeing, in the course of events, what will probably happen to this filling or that plate, or the other piece of bridge work, and to fail on the side of predicting possible failure rather than yielding to a sanguine impulse to promise permanent success. It requires a degree of moral courage, which perhaps few possess, boldly to announce in advance of what promises to be a paying operation, that it will probably fail utterly, in three, five or ten years. Such a course may drive the applicant away from the office. And yet how often are patients dismissed after numerous sittings and trying operations, laboring under a delusive notion—which the operator dares not share—that they are done with dental operations for all time? Better far to have told them in the first place what you suspected. Still more unfortunate the case of the young dentist sanguine of his ability to accomplish the miracle, when he discovers years afterwards, his failure.

Discretion in the performance of dental operations appertains to a choice of time and occasion for performing them. The patient comes in announcing that he or she is not feeling well; must be back to the dressmakers or the counting-room in forty minutes; or the dentist himself is not feeling well, or has only forty minutes to spare for a two hours, operation. Just at this stage the operator with real discernment and decision of character scores a success by declining to operate at the time. He perhaps disappoints his patient, but he is more than likely to find that he has gained increased confidence. The foregoing relates perhaps more distinctly to management of the dentist's patients. Now for some of the instances of failure. A large iron-jawed man comes in complaining that his fillings are wearing out. He shows the six anterior teeth, upper and lower—twelve in all—bushed with gold. At least he reminds you that you bushed them three years before. The teeth proper project about a line above the gum borders. All of the gold in the lower six, ex-

cepting that in the retaining grooves, is gone. The upper six are battered all out of shape. You find by referring to your ledger that you finished those fillings with gold and platinum folds, and you recall that you told him that they ought to last twelve or fifteen years. He recalls that he paid you \$200 for the fillings. There they are, a brilliant array of ruins. You ask him: "where are the plates I inserted to supply the loss of the back teeth?" "Oh I never wore them after the first day." "Didn't I caution you that you must wear them, or the fillings in front would be likely to give way?" "No, I don't think you did." Nor did you, because you had in reality, no such misgivings. You thought that the gold and platinum cappings would stand any abuse. But what most chagrins you is the discovery that most of the teeth are loose; pus oozes out around them. The man had catarrh when you performed the operation, and you noticed the fact, and in the absence of any certain knowledge that catarrh may involve the teeth, you went ahead without particularly considering this possible, even probable outcome. Now you wish that you had extracted those teeth and made the man a full denture. You know that more partial sets of this description are worn in wash-stand drawers than in people's mouths, and yet you made those partial sets, hoping that this case would prove an exception.

Case No. 2: A patient comes in for whom you filled half a dozen proximal cavities in incisors, a year before. Molars and bicuspid in both jaws are missing. Fillings out, much to your astonishment. The teeth are widely separated and incline inward. You fill them again, taking extraordinary pains. In another year the patient returns; filling out the second time. And so it goes on, until finally you wake up to a realization that they have been *ground* out. The teeth have been doing double work, as grinders and incisors proper. The cavities being difficult of access you were unable to mallet the fillings throughout, hand pressure was largely relied on; a filling lacking in the quality of density was the result, and constant attrition caused their disintegration. You recall the fact that you advised wholesale extraction and a full denture, in the first place; but the patient

demurred, and you weakly yielded instead of insisting on being the "doctor."

Case No. 3:—An Irish cook. You will know better next time.

Case No. 4:—Old lady of seventy. Has been edentulous for twenty years. Children insist on her having a set of teeth. No perceptible alveolar ridge below. Lips deeply retracted. You make full dentures with ample restoration, by means of "plumpers" of lost tissue. Patient delighted. Wears teeth for six months in little blue china closet. Too much of a mouthful. You make another set, using similar teeth and no "plumpers." Old lady waylays you at church "mite" societies, county fair, funerals, etc. Wants her money back. Moral: Don't undertake to insert teeth for old people.

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#### DISCUSSION ON DR. SAGE'S PAPER.

*Dr. H. A. Smith.*—I regret I was not here when the paper was read. Dr. Sage, I think, refers to his student life, but not to the student life of the present day. It used to be the theory of our friend, the late Dr. Berry, that nobody ought to practice dentistry till he had been in a dental office ten years and had been thoroughly trained and instructed in the direction of discrimination in the performance of dental operations. It does not require ten years to acquire some discrimination in the performance of our operations. There is no class of professional men who come up so well prepared as the graduates of our dental colleges at the present day. About text books: there is a great lack of text books; the student has no text books that are up to date. When shall we have good text books? When there is a demand for them. Then, at present this knowledge must come from observation or from the teacher. The best thing we have at the present day in way of books are our dental journals. We have a class of writers that are giving us excellent articles.

Dr. Sage goes into the question of inheritance, those who are natural born dentists. They are the most dangerous class. Dr. Sage goes on to speak of failures in practice where teeth

are filled on the cutting edge to be broken down in a few years. Why do they fail? The impact in use disintegrates from the enamel, or the enamel gives way under the force brought upon it and the filling comes out. That is no lack of discrimination in the making of these fillings and the dentist should not be expected to do them over again without remuneration. The last part of the paper refers to an old lady. There is no lack of discrimination made in making teeth for old ladies, the difficulty is in getting them to be persistent in learning to wear them. A gentleman said to me some time ago: "I do not want these teeth, but my physician says I must have them and my family wants me to have them." I made the teeth and he took them home and put them away in the bureau-drawer but would not try to wear them. Our young practitioners do not need ten years now to learn how to discriminate; they do discriminate and this is on account of their thorough college training.

*Dr. Sage.*—I took the ground, or assumed, in my paper that a man ought to know a good deal about dentistry after being in practice ten years, if not it is his own fault; but some go along without making notes of their own failures, and consequently they learn nothing as they proceed. As regards the responsibility of the dentist our patients expect more from us than we are willing to give. Warn them not to expect too much from their dentists, yet it is not an easy matter to make them understand that we are not responsible for the fillings. We are held more responsible than the physician.

When the physician gives a prescription he tells the patient if it does not help or give relief to come back again. I maintain, therefore, that the dentist ought not to promise too much, so that people can come back in ten years expecting to have their fillings replaced without charge. It is better to discourage a patient on partial dentures. As to the wearing away of a gold filling tipped with platinum, I was never cautioned before I used it. In the case of the gentleman who came in with all the teeth gone except five or six and wanted them filled, I wish I had pulled out the teeth and put in a full set.

## On Edge.

BY DR. C. M. WRIGHT, D.D.S., CINCINNATI, O.

Read before the Mississippi Valley Dental Society, March 9, 1892.

I have made a mistake in the selection of a subject, or title. The head-lines and the subject matter of my paper may not bear that harmonious correspondence one with the other, which is so gratifying to the logically inclined scientific mind. The mistake happened in this way, when I received an invitation from Dr. Custer to read a paper at this meeting, I accepted with a modest hyperæmia of the peripheral capillaries of my face and head. When I received a second invitation to name the paper—the unborn product of a secretion from my cortex cerebri—before I knew its sex or condition, when I had only promised to do my best with the means I had, to cause a paper to be born, I naturally felt as though I were “on edge”, and I selected the subject nearest to my physical or mental condition.

I could so much more easily have written on some other subject. I might have called my paper “Confessions”. Not of an opium eater, for De Quincy has made that a classic in English; nor of a religious fanatic, who argues the point of whether life is worth living, for Tolstoi has been before me in Russia, in French, and is living up to his doctrines. I should not have written the confessions of a double chloride of gold patient. The newspapers have done and are doing that. My confessions would have been simply the confessions of a dentist. An every day dentist. A

“dollar a day” dentist. (I have left a space before the dollar, so that it can read a 20 dollar a day or a 100 dollar a day dentist, as you please). A dentist I mean who is occupied as we all are, in the “demnition grind” of life, such as Mantalini found at the mangle. A dentist who, when he dies can expect no greater praise, no more picturesque epitaph than the following:

“ He never gained immortal fame,

Nor conquered earthly ills.

But men mourn for him just the same,

He always paid his bills.”

The confessions of such a man I might have written, and you, my dear hearers, and you, the unnumbered host of readers who would perhaps see my confessions in print in the Dental Journals might have had the opportunity of seeking solitude to relieve the discharge of feeling and the flushing of lachrymal ducts that might follow. And the discharge and the flushing would do you good. You are all "on edge". You live in a continual strain, straining to suppress within the bounds of law and order, the law and order established by society and called politeness, your natural feelings.

You have, all day long in your offices, the disagreeable tingling sensations perceptibly creeping up every afferent nerve and down every efferent nerve in your bodies, the sensation defined by Bacon as resulting from bringing an acid in contact with the enamel of the teeth. You are conscious during every minute which you spend in your operating rooms that you are "on edge", on the edge of a yawning precipice. The precipice is not there any more than the acid is in contact with your enamel, but the sensation is, and you suppress it and maintain an outward appearance of placid dignity or interested kindliness, or tender sympathy. You are like the Spartan youths, who are reported to have looked steadily and with smiling denial on their faces, into the accusers' eyes, while the foxes concealed in their bosoms were gnawing at their vitals. Why have we these foxes gnawing at our vitals? Why are our "nerves" always "on edge?" It is because that for from eight to ten hours each day we are engaged in the performance of delicate and trying surgical operations. It is because some of our surgical operations require so much time and endurance that our nervous centres become exhausted from the long continued stimulation. It is because we must give so much of what psychologists define as "artificial attention", which is a very different article from the spontaneous attention of the child or the savage. This sort of attention is a cultivated effort on the part of the will, and it is a direct exercise of nervous force with a complicated inhibitory strain on a large number of motor nerves. It is because we have no diastolic recuperation. The systolic period is too long. It lasts all day. The general sur-

geon who begins with his knives and saws at 8 o'clock every morning and employs them upon one patient after another without rest until 5 o'clock in the afternoon, is "on edge," just as we are.

The mechanic who uses saws and knives in a shop, works ten hours each day with comparative ease, and does not understand what being "on edge" means. The dentist who works at the bench in his laboratory, no matter how delicate the skill demanding his labor may be, is not "on edge." He enjoys labor as an artist can, and he might solder and carve 12 hours a day and keep it up for fifty years without suffering nervous strain or exhaustion. But the man who adapts the appliance to the living tissues is engaged in an entirely different way. He is engaged in surgery, and surgery is "per se" an excitor of nerve centre activity. Mechanical operations are not. Surgery implies manual operations but it also implies healing, and our title of "D.D.S." implies the healing by manual operations certain lesions of the living body. The driving of a threaded needle through the lips of a gaping wound, and taking stitches to bring these lips together, and afterwards when living matter has succeeded in sealing the sides of a wound together by a sticky exudate and has sent out cells and buds to repair and regenerate the severed tissue, and re-instate the circulation of blood through repaired blood vessels, to remove the stitches is a very simple surgical operation, as far as the manual operation is concerned, it is very much like the tailor's work on a rent in one's garment, and the taking out of basting threads. But the tailor can sit cross legged on his table the live long day, and can sing and whistle, and never suspect that he has nerves or nerve centres, while the surgeon expends in fifteen minutes nervous force enough to run an entire tailoring establishment.

The surgeon is "on edge" delicately sharpened, keenly ground to a cutting edge, and the tailor is like a blunt hammer in comparison. There is no edge to be destroyed. The dental surgeon has this edge sharpened like a razor, and yet he hacks away for eight continuous hours each day, and expects to recuperate sufficiently each night. I need not detail the thousand and one

things, tough things, hard things, that come in contact with this fine edge every hour in our daily practice. You who have been in practice for ten years, and who started in with a great supply of elasticity and resiliency have not begun to suffer much. You rather enjoy the kicking against the pricks. You who have gone around the track for another ten years, and reckon your dental experience as a twenty year one, begin to suspect that your work in life is extra hard. You who have had thirty years of this mill of the gods feel dead certain that it "grinds exceeding small." You are the men whose long and broad experience has taught you to entertain a colossal respect for the nervous system of man. You are the men who study with the deepest personal interest the physiology of nervous matter, and wonder at the correlated force that presides over every contraction of a muscle cell, that grasps with an intelligent hand every blood vessel, ready to respond in an instant to the slightest call for an increase of the life giving fluid to any tissue or organ or part, that maintains with never ceasing oscillation the heat producing and the heat reducing conditions of the tissues, so that the temperature is regulated more perfectly than by the delicate apparatus on the vulcanizers in our laboratories; that adjusts the supply to the demand for nourishment from every remote cell in the organism. This nervous system with its centres keenly sensitive to everything within and without the body, and ready to respond to every impression. You are the men who appreciate that this sensitive system cannot last forever, and that you are driving it to its utmost capacity in your daily work. You have held a tight rein upon these centres for thirty years in your daily and hourly operations in order that you might (unconsciously though it may be) influence by suggestion the nervous centres of all classes and conditions of minds as presented by your patients. In one day you will exercise this suggestion, at the expense of your own stock of physiological force, on old men and women, on boys and young girls, on children and hysterical mothers. After each case, be it more or less trying, you bob up serenely, and begin again the struggle. Your calm face does not tell the secret of your palpitating heart and your quivering nerves. Per-

haps some of my hearers do not quite believe in the truth of the picture presented here. They may point to the pioneers in our profession who are still vigorous, intellectually and physically. We, of Cincinnati, well remember our departed friend, Dr. A. Berry, an octogenarian, and a man of unconquerable vitality. He it was who pooh poohed the idea of men becoming exhausted by eight or ten hours a day, and boasted that sixteen hours per day would be a fair day's work for a dental surgeon. He laughed to scorn the young man who complained of his nerves. But Dr. Berry was an exception to the rule among men. He had his own methods of relief from the strain of daily practice. I have studied him well. Firstly, Dr. Berry did a large share of laboratory work himself. This is a relief from surgery. Secondly, if I may be permitted to say, with deep respect for his memory, and as a friend and admirer, Dr. Berry constantly found vent for his overcharged nerve centres by vigorous invectives against what he considered wrongs and abuses, in other men's diet and morals, and religious doctrines. Why! The situation of our Garfield Monument in the middle of Race street must have added months if not years to Dr. Berry's nervous activity, for it furnished to him a constant escape valve for the compressed and surcharged nervous excitations caused by daily practice. His ever ready and picturesquely expressed anger at the idiocy of people who would permit a monument to be placed in the middle of a thoroughfare to frighten horses, certainly acted exactly like a steam valve well set to blow off when the pressure reached a certain point, and the boiler is saved from strain. The nervous system is so delicately *en rapport* with the entire world about us, and the most minute particle of matters within us, that the advanced students of physiology feel like babes playing on the sand with an unknown ocean of knowledge spread out before them, and just as the pebble is cast into this ocean by the child on the shore causes waves to circle about it and widen out to eternity, so every impression upon the nerve centres may cause ripples that will be felt in generations to come. Every time a child is spanked, a wave of trouble washes the control centres and the reflexes set every cell, or every spoke of living matter "on edge,"

and nutrition, function and development are affected, favorably or unfavorably.

How do we know that the faults that we call congenital, let us say even in the enamel of the adult tooth, the weak spots that cannot resist the invader, the soil that proves suitable for pathogenetic micro-organisms were not made predisposing causes by faults in nutrition and that these faults in nutrition were owing to nervous impressions excited by pain, from the concussion of the mother's hand upon a sensitive nerve, situated at a very remote distance from the enamel forming organ of the child? Have you ever thought upon this aspect? Richter asks, "Have you, learned men, ever stopped to calculate the effect of a mother's scream on the character of the unborn child," and I ask, have you, wise dentists, ever stopped to calculate that the defective spots on the enamel might have been caused by the spanking received in babyhood?

Es ist nicht unmöglich.

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DISCUSSION ON DR. C. N. WRIGHT'S PAPER.

*Dr. F. A. Hunter.*—Mr. President and Gentlemen of the Mississippi Valley Society: In the moment of weakness when I consented to open the discussion on Dr. Wright's paper, I must have been "on edge." To open a discussion on one of Wright's papers is a difficult matter, he usually goes so thoroughly into the subject that he leaves nothing for anybody else to say. The only escape left me is to differ from him. I can not differ in all points, but in some I think there is opportunity for differing. There is no doubt that a dentist in active practice is frequently worried and annoyed to a very great extent; but it is not confined alone to that profession; all have the same peculiarity, a man in any profession who is busy, is necessarily "on edge." A man in the actual practice of dentistry is simply "in the swim or out of it." We can not control our practice to any considerable extent; if we have business to do we must attend to it and take the necessary annoyances and worries pertaining to it or we shall find ourselves not in it at all. I think if we look at the generality of the men in the dental profession, men who have

been in practice thirty or forty years, such men as Taft, Morrison, Smith and myself, we shall see that they will compare favorably with men who have been busy in other professions the same length of time. All things considered, I think Dr. Wright places too much stress upon this point.

*Wm. Knight, M.D.*—I do not know that I have any remarks to make “on edge;” Dr. Wright has, in a very witty manner, told the truth that pertains to all professional men. I think however, that the surgeon or physician is “on edge” just the same as the dentist.

*Dr. Wright.*—Dr. Knight’s remarks refer to all professions, I made a difference between dentists and those of Dr. Knight’s profession. We have eight hours of continuous work without the rest between times that the physician frequently has in going to and fro to visit his patients; he has to visit a patient in one end of town, and another in another part of town, which is not like continuous work. The office hours of the physician are the most trying of the whole day, and that is just what the dentist has all the time. I think if they had a continuation of office hours instead of visiting, their profession would be as trying as that of the dentist. I admit that a surgeon is under a great strain when performing an operation, but the question is whether we do not have a stronger, harder strain caused by continuous work.

*Dr. H. A. Smith.*—Dr. Wright is right in many respects, when we look at the operator at the chair and consider the length of time he has to stand, there is a wide difference between his work and that of the physician who has patients at regular hours. The physician, after his office hours, has his recreation in getting in his carriage and going off to visit his patients. I have been in practice twenty-one years: in the first ten years of practice I did not mind it at all, but for the past five it has told on me and I have had to be careful in many ways, diet, etc. We just live, as it were, in a small place and work hard from morning until night and it does wear on us; it does tell on us; it tells on me and every one who has a good practice; but it is true that we must attend to our practice if we desire to keep it. We might look at the business man, he is “on edge,” being pushed with business

and if he can not get the money to meet his demands, certainly he is "on edge," but no comparison with the dentist; it is the length of time that the dentist has to stand at the chair that tells on his nervous system.

*Dr. Morrison.*—I am somewhat in the same condition as Dr. Hunter. The ground has been so well covered by our essayist that it leaves nothing for us to say. In the Mississippi Valley farther west we have the same little irritations and annoyances that seem to wear so upon the man; the only relief, I think, is to have something like the late Dr. Berry; we must all be cranks in some things, or at least have something outside our office to do to take off the nervousness and friction caused by continually standing at the chair, the "sharp edgedness" that Dr. Wright terms it. I have denominated this condition as an electrical one. There is often a want of proper electrical balance between our patients and ourselves, and it is also aggravated and increased by the direct contact of the instrument against the moist, softened condition of the dentine. When we can manage to keep the dentine thoroughly dry, it will be found that we can in a measure restrain this electricity and be comparatively comfortable. There is an infinite dynamo in the mouth. This is noticeable when we are using rubber polishing points, and the like; patients often complain of tickling of lip or nose. This is actually the case caused by electricity generated through friction of the rubber point. It is just the same to my mind as though caused by a small dynamo.

*M. H. Fletcher.*—It is proven beyond doubt that every organism is possessed of a certain amount of electricity, but the amount varies. Electricity is carried better by some individuals than others, and coming in contact with this class of patients, through the medium of an excavator or other instrument, we experience this feeling of being "on edge" to a greater degree. The great difficulty is in doing away with the induction currents. We have found nothing as yet to accomplish this. It does seem to me that through this medium we are in contact with this agent in spite of all we can do. When we attain a certain stage of life the tissues of the body do not repair as rapidly as they did for-

merly, and therefore we are not as able to withstand this influence, and it tells more readily on us ; yet if we are able to control ourselves we can better control our patients. An abundant supply of fresh air and good light in the operating room is also a great aid. I think what Dr. Morrison has stated is founded upon facts, and there is an opportunity for investigating and experimenting in this direction.

*W. N. Morrison.*—Individually I have great relief from recreation. I fortunately possess a place in the country, and frequently take a run out there, freeing my mind entirely from my office and practice, and after working on the farm for one day I go back to my office feeling like a new man. There is a tendency among the profession to overwork ; six or eight hours a day is long enough, and when your day's work is finished free your mind from business, and play the rest of the time, and you will find yourselves better off for so doing.

Dr. Smith also spoke of the necessity for some outside occupation in order to work off the nervous irritation, saying "all professional men work hard—lawyers, physicians and ministers—but the lawyer has the advantage of a long summer vacation ; and who of us takes that ? The minister gets a sore throat occasionally, but we have no recreation, for our work is from day to day throughout the year. I question if a man does not do as well by working five hours as by ten hours per day ; he can get about as much in way of fees if he is a competent man. I find great relief in reading the literature of our profession."

*Dr. Gray.*—I agree with Dr. Smith looking at this subject in a physiological way. Who ever heard of an athlete being troubled with nervousness ? But those of sedentary habits suffer from indigestion, constipation, etc., and will naturally be cross, nervous and out of fix ; whenever we defy the laws of health we must suffer the consequences. We, as dentists, do not take exercise enough ; we can not expect to keep ourselves in a physiological state. If a man is confined for eight hours by his profession let him have some dumb-bells or chest exerciser and get up a perspiration, then take a quick bath and rub himself vigorously ; this will rest and refresh him. Many times when

I have been so nervous that I was in a quiver I would get on my horse and gallop away and after a long ride come back much refreshed.

*Dr. R. E. Taylor*—I do not believe in the electrical theory as advanced by the gentlemen who have just spoken. I do believe, however, that if a man is earnest and honest in his work and tries to please his patients, just in that proportion is this nervous strain on the system.

If you get a case where the operation is not difficult there is no particular strain, but if it is a difficult operation and you can not get at some point you are striving to, with excavator or plugger, or you feel that the patient has but little confidence in your ability it becomes a mental strain that tells more upon dentists than upon any other professional men. Take the surgeon for comparison: Even the operation of amputating a leg or arm does not cause so great a strain as we experience in many operations about the mouth. In this case the surgeon realizes that the patient is under the influence of an anæsthetic and he works away without the strain that dentists experience in excavating a very sensitive cavity.

Dr. Berry has been referred to as a man of great endurance. I was twice associated with him in business and probably know his characteristics better than any other man. He was different from most of us in that he could lay down an instrument and inside of three minutes be asleep. I have seen him drop off to sleep with a plate in one hand and a file in the other, and after a few minutes awake thoroughly refreshed. We all know that sleep is nature's great restorer and I believe that this habit had more to do with his wonderful powers of endurance and long professional life than anything else.

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### World's Fair Items.

Of the 75,560,000 feet of lumber required for the Exposition buildings, docks and electric subways, 54,875,800 have been placed. Of iron and steel 39,490,900 pounds, or nearly 20,000 tons, are required. Of this nearly half is in place, and the remainder will all be in position before the first of June.

## PROCEEDINGS.

### Proceedings of the Mississippi Valley Dental Association.

The Forty-eighth Annual Meeting of the Mississippi Valley Dental Association was held in the Lincoln Club Hall, Eighth and Race streets, Cincinnati, O., on Wednesday, March 9, 1892.

The Society was called to order by the President, L. E. Custer, D. D. S., of Dayton, O., at 10:30 A. M.

The minutes of the last meeting were read by the Recording Secretary, H. T. Smith, and approved.

The name of Dr. A. A. Kumler, of Cincinnati, was presented by Dr. C. M. Wright, for membership, the rules were suspended, the Secretary cast the ballot and Dr. Kumler was elected.

The report of the Treasurer was then read, and a recess granted members for the payment of dues.

Owing to the small number in attendance at this hour, a motion was made to postpone the President's address until the afternoon session, which was afterwards withdrawn. Dr. Jessie Dillon, Second Vice-President, taking the chair during the President's address; which was followed by a discussion, on the feasibility of the co-operation of the Fiftieth Anniversary of this Society with the World's Columbian Dental Congress, which is to be held next year in Chicago. A Nominating Committee was then appointed to consist of Drs. Fletcher, Wright and Taft, who were to select suitable persons to look up the literature pertaining to the history of this Society.

Dr. Hunter moved that the morning session be from 9 to 12, the afternoon from 2 to 5, and no evening session, except on Thursday, which evening had been set apart for Dr. Fletcher's paper illustrated by lantern. Carried.

There being no further business at this hour—adjourned till 2 P. M.

#### WEDNESDAY AFTERNOON SESSION.

Meeting called to order at 2 o'clock by President Custer.

Minutes of the morning session read and adopted.

Owing to the unavoidable absence of Drs. Callahan and Sage, whose names appeared first on the programme, it was moved and

seconded that Dr. C. M. Wright, of Cincinnati, read his paper "On Edge". Dr. Wright rose with the remark, "I wish to stand up as a man ready prepared, even if it is not my turn." This paper was followed by a very lengthy and amusing discussion as to the different methods of rest and recuperation from nervousness, caused by continual standing at the chair, in which Drs. Hunter, Smith, Morrison, Fletcher, R. E. Taylor and others took part.

Dr. W. B. Ames, of Chicago, Ills., then read his paper entitled, "A New Oxyphosphate for Crown Setting", in which were brought out many points in favor of this new cement for filling cavities, etc., its desirable working qualities, its hardness and stability after crystallization, also the length of time it remains in the plastic condition, giving the operator plenty of time. This paper was discussed by Drs. Cassidy, Heise, Morrison, Smith, Wright and Ames.

Drs. Leslie, Cassidy and Fletcher were then appointed a Committee on Necrology, to draw up resolutions on the death of J. G. Cameron, D. D. S., of Garfield Place, Cincinnati.

Dr. C. M. Wright then extended a cordial invitation to all present to attend the Commencement Exercises of the Ohio Dental College at the Odeon that evening.

Adjourned to 9 o'clock Thursday.

#### THURSDAY MORNING, MARCH 10TH, 9 A. M.

Meeting called to order by the President.

Minutes of previous session read and approved.

Dr. F. W. Sage, of Cincinnati, not being present at this time, it was moved and seconded that his paper be read by the Secretary.

Dr. Sage's long and interesting paper on "Discretion in the Performance of Dental Operations" was then read; the discussion of which was opened by Dr. H. A. Smith, followed by some remarks by Dr. Sage.

Dr. G. S. Junkerman, of Cincinnati, read a paper on "Surgery of the Antrum," in which was clearly brought out the advisability of extracting the fang of the tooth, should it by accident break off and be forced into the Antrum. It was ably dis-

cussed by Drs. Knight, Wright, Jay, Junkerman, Smith and Fletcher.

Dr. H. A. Smith, of Cincinnati, then read a paper on "Injury to the Superior Incisor Teeth; Supposed Agency of Phagocytes in Effecting a Cure." The discussion opened by Dr. Wright, followed by Drs. Cassidy, Heise, Fletcher, Smith and Hunter.

A meeting of the stockholders of the Ohio College at 1:30 P. M., was then announced.

Adjourned to the afternoon.

THURSDAY AFTERNOON, MARCH 11TH, 2 P. M.

After the meeting of stockholders at 1:30, the regular session was called to order by the President at 2 o'clock.

Minutes of the previous session read and approved.

A voluntary paper by Wm. Knight, M. D., of Cincinnati, on "Permanent Closure of the Jaws." An exhibition of the patient, (who had been suffering for fifteen years, and during that time had existed on liquids taken through a vacuum made by knocking out two of the teeth,) upon whom this delicate and successful operation had been performed, added much to the interest of the meeting.

Discussion by Drs. Harlan, H. T. Smith, Knight and Leslie.

Dr. Grant Mollyneaux, of Cincinnati, also read a most interesting paper on "Mechanical Treatment of Cleft Palate," illustrated by patients, models and charts. Dr. Mollyneaux demonstrating the hygienic properties of the Hard Rubber for these Appliances. Discussion by Drs. Ames, Doyle, Smith and Morrison.

The Committee on Membership then proposed the names of Mrs. Dr. Montz, of Warsaw, Ky., and Dr. B. F. Johnson, of Camden, O. Rules suspended and they were elected by ballot.

THURSDAY EVENING SESSION.

Called to order by President Custer at 8 P. M.

Notice that the meeting on Friday morning would be at the Ohio Dental College at 9 o'clock.

Dr. M. H. Fletcher's paper on "The Skin and its Appendages, with Special Reference to the Development of the Teeth," illustrated by lantern, was both interesting and instructive.

A vote of thanks was tendered Dr. Fletcher for his valuable paper.

Adjourned to 9 A. M. Friday.

#### FRIDAY MORNING SESSION.

Meeting called to order by President Custer.

Minutes of the afternoon session read and approved.

The first paper was by Dr. A. O. Rawls, of Lexington, Ky., on "Decolorization of the Teeth." Discussion by Drs. Taft, Baxter, Cassidy and Heise."

Dr. O. N. Heise, of Cincinnati, read a paper on "Pental, the New Anæsthetic." in which was brought forth many strong points in favor of this new preparation for use in all surgical operations. Discussion opened by J. S. Cassidy, of Covington, followed by nearly all present.

Resolutions were then read on the death of Dr. Cameron, approved, and placed on the minutes, a copy ordered to be sent to the bereaved family, also published in the daily papers; after which fifteen minutes were spent in Memorial Services. All spoke of his noble character, expressed their deep sorrow at his death and realized they had lost a true friend.

The Society next proceeded to the election of officers for the ensuing year. President, O. N. Heise, Cincinnati; First Vice-President, W. B. Ames, of Chicago; Second Vice-President, A. Rose, of Cincinnati; Recording Secretary, H. T. Smith, of Cincinnati; Corresponding Secretary, H. C. Matlack, of Cincinnati; Treasurer, F. A. Hunter, of Cincinnati.

The President-elect was conducted to the Chair and introduced to the Society by Dr. Hunter; after which the meeting adjourned to 2 o'clock.

#### AFTERNOON SESSION.

Interesting Clinics were held in the afternoon. Demonstration of the use of the Bonwill Mechanical Mallet, with Electric Motive Power; and other things.

Adjourned to meet next year in the Ohio College of Dental Surgery.

# DENTAL LAW.

## Amended Dental Law of Ohio.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That sections 4404 and 6991 of the Revised Statutes of Ohio be so amended as to read as follows :

SEC. 4404. From and after July 4, 1892, it shall be unlawful for any person to practice dentistry in this State, unless such person shall have first obtained a certificate of qualification issued by the State Board of Dental Examiners of this State, as hereinafter provided :

1. A Board of Dental Examiners, to consist of five practicing dentists, resident in this State, is hereby created, whose duty it shall be to carry out the purposes and to enforce the provisions of this act. The members of the first Board of Dental Examiners under the provisions of this act shall be appointed by the Governor of the State on or before the first day of May, 1892. The term for which members of said board shall be appointed shall be three years, and until their successors shall be duly appointed and qualified, and no person shall be appointed for or serve to exceed two terms in succession. All vacancies in said board caused by expiration of term, or otherwise, shall be filled by the appointment of the Governor of the State.

2. Said board shall have power to make reasonable rules and regulations for the purpose of carrying out and enforcing the provisions of this act. It shall choose one of its members president, and one secretary ; and shall hold two regular meetings in the city of Columbus, on the last Tuesday in May and November, in each year, and at such other times as may be deemed necessary by said board. A majority of said board shall at all times constitute a quorum thereof for the transaction of business, but a less number may adjourn from time to time. The board shall keep full minutes of all of its proceedings, and a full register of all persons licensed and certified as dentists by said board, which shall be public records, and at all reasonable times open to inspection as such. A transcript of any of the entries in such min-

utes and register, certified by the secretary under the seal of said board, shall at all times and places be competent evidence of the facts therein stated. The members of the board shall have power to administer oaths, and the board shall have power to hear testimony in all matters relating to the duties imposed upon it by law.

3. Any and all persons who shall desire to practice dentistry in this State after July 4, 1892, except such persons as have been regularly since July 4, 1889, engaged in the practice of dentistry in this State, or who may hold, or may hereafter obtain diplomas from any reputable dental college, shall file application in writing with the Secretary of said Board of Dental Examiners for examination and license, and at the time of making such application shall pay to the secretary of said board a fee of ten dollars; and each applicant shall present himself before said board at its first regular meeting after filing his application for examination by said board. The examination shall be of an elementary and practical character, but sufficiently thorough to test the fitness of the applicant to practice dentistry. The examination may be written, or oral, or both, at the option of the board, and shall include the following subjects, to wit: anatomy, physiology, chemistry, materia medica, therapeutics, metallurgy, histology, pathology, and operative, mechanical and surgical dentistry. All persons successfully passing such examinations, or who may legally hold diplomas from any reputable college of the United States, or any foreign country, or who may have been regularly since July 4, 1889, engaged in the practice of dentistry in this State, of good moral character, shall be registered and licensed by said board of dentists, and shall receive a certificate of such registration and license duly authenticated by the seal and signature of the president and secretary of said board; and in no case shall the examination fee be refunded.

4. Every person receiving such a certificate of registration and license as dentist shall, before engaging in the practice of dentistry in this State, place and retain in place while engaged in the practice of dentistry in this State, such certificate of registration and license in a conspicuous position at his place of business, in such a manner as to be easily seen and read.

5. Every person who may legally hold a diploma from any reputable dental college in the United States, or any foreign country, or who has been regularly since July 4, 1889, engaged in the practice of dentistry in this State, shall, upon application and payment of a fee of two dollars, to the secretary of said board of dental examiners, and producing satisfactory and reasonable proof of the fact that he holds such diploma, or has been so engaged in the practice of dentistry in this State since July 4, 1889, receive a certificate of registration and license to practice dentistry in this State. Every applicant for license to practice dentistry under the provisions of this section shall, in person, by mail or otherwise, produce for the inspection of the board of dental examiners his diploma, or the affidavit of himself and two freeholders stating that he has been regularly engaged in the practice of dentistry in this State, and at what place or places, since July 4, 1889; and if the board of dental examiners shall, upon inspection thereof, find that the applicant is legally qualified under the provisions of this act to practice dentistry in this State, the secretary shall, without unnecessary delay, deliver to the applicant a certificate of registration and license to practice dentistry in this State, or forward the same without expense to the board in such manner as the applicant may direct. The certificate of the secretary of said board of dental examiners, under the seal of said board, stating that any person is a registered and licensed dentist, shall be *prima facie* evidence that such person is entitled to practice dentistry in this State.

SEC. 6991. All persons shall be said to be practicing dentistry within the meaning of this act, who shall for a fee, salary or other reward paid, or to be paid, either to himself or to another person, perform dental operations of any kind, treat diseases or lesions of human teeth or jaws, or attempt to correct mal-positions thereof. But nothing contained in this act shall be taken to apply to acts of *bona fide* students of dentistry done in the pursuit of clinical advantages under the direct supervision of a preceptor who is a licensed dentist in this State, or while in attendance upon a regular course of study in a reputable dental college, or to the acts of legally qualified physicians and surgeons.

1. Out of the funds coming into the possession of the board as

above specified, the members of said board may each receive a compensation in the sum of five dollars for each day actually engaged in the duties of their office as such examiners ; and a mileage of three cents per mile for all distance necessarily traveled in going to and coming from the meetings of the board. Said expenses shall be paid from the fees and assessments received by the board under the provisions of this act, and no part of the salary or other expenses of the board shall ever be paid out of the State treasury. All moneys received in excess of the said per diem allowance and mileage as above provided for, shall be held by the secretary of said board as a special fund for other expenses of said board and carrying out provisions of this act, he giving such bond as the board shall from time to time direct.

2. Any person who shall violate any of the provisions of this act, shall be guilty of a misdemeanor, and upon conviction thereof may be fined not less than twenty-five dollars nor more than one hundred dollars, or be confined not less than ten days nor more than one month in the county jail, or both. All fines thus received shall be paid into the common school fund of the county in which such conviction takes place. It is hereby made the duty of the prosecuting attorney of each county in the State to prosecute every case to final judgment whenever his attention shall be called to a violation of the provisions of this act.

3. Any person who shall knowingly or falsely claim or pretend to have or hold a certificate of registration, or who shall falsely and with intent to deceive the public, claim or pretend to be a registered and licensed dentist, not being such a registered or licensed dentist, shall be deemed guilty of a misdemeanor and shall be liable to the penalties provided in this act.

4. The board of examiners created by this amended act may sue or be sued, and in all actions brought by or against it, it shall be made a party under the name of the Board of Dental Examiners of the State of Ohio, and no suit shall abate by reason of any change in the membership of said board.

SEC. 2. Said original sections 4404 and 6991, to which this is amendatory, are hereby repealed.

SEC. 3. This act shall take effect and be in force from and after its passage.

# COMMENCEMENTS.

## Philadelphia Dental College.

The twenty-ninth annual commencement exercises of the Philadelphia Dental College were held at the American Academy of Music, Philadelphia, Pa., on Thursday, February 25, 1892, at 8 P. M.

The number of matriculates for the session was two hundred and fifty-nine.

The address to the graduates was delivered by Professor S. H. Guilford, D.D.S., Ph. D., and the valedictory address by J. R. Coleman, D.D.S.

The degree of D.D.S. was conferred on the following graduates by Ex-Governor James A. Beaver, President of the Board of Trustees:

| NAME                  | RESIDENCE     | NAME                   | RESIDENCE        |
|-----------------------|---------------|------------------------|------------------|
| Egerton S Allen       | Nova Scotia   | R E Duignan            | New York         |
| Courtland J Allen     | Rhode Island  | L F Eaton              | Connecticut      |
| J Wilmot Angwin       | Canada        | Elma H Edgar           | New York         |
| H D Atkinson          | Missouri      | David L Edwards        | New York         |
| Vincent J Baggot      | Rhode Island  | Frank A Elson          | Ohio             |
| Adolf Balcke          | Germany       | Edmund P Ennis         | Canada           |
| J D Ballard           | New Jersey    | H H Erskine            | Ohio             |
| Wm A Bartlett jr      | Maine         | Deering J Fisher       | Rhode Island     |
| Howard S Bath         | Canada        | Christopher E Fletcher | Missouri         |
| Johannes A Baumgardt  | Germany       | Charles A Frain        | Canada           |
| Frank G Bedell        | New York      | Carlos F Fuentes       | Chili            |
| Fred W Benz           | New York      | Edwin Russell Gamble   | Pennsylvania     |
| Neil H Bishop         | Ohio          | Alexander J Gillis     | Massachusetts    |
| John A Blackett       | Australia     | Chas T Gliden          | Pennsylvania     |
| Sylvester A Bourgeois | Louisiana     | Wesley Good            | Missouri         |
| D L Bower             | Pennsylvania  | Sidney W. Gordon       | Canada           |
| Arthur M Bowman       | New York      | Leslie H Grant         | New Jersey       |
| Gertrude A Bright     | England       | F H Greusel A B        | Michigan         |
| Joseph Brooks         | Canada        | John Grieder jr        | New Jersey       |
| Edwin D Butterworth   | New York      | Percy L Haight         | New York         |
| Frank J Bush          | New York      | Herbert E Hall         | British Columbia |
| Hugh F Calder         | Nova Scotia   | Chas R Hamby           | Illinois         |
| Charles Cameron       | Canada        | R S Hanna              | Canada           |
| E E Cawood            | Oregon        | Richard C Hart         | New York         |
| Arthur J Chilcott     | Maine         | Harrie Tralee Harvey   | Michigan         |
| John A Clarke         | Canada        | W G Henry              | Pennsylvania     |
| J Edwin Clark         | Pennsylvania  | W E P Hewitt           | Canada           |
| J Robinson Coleman    | Canada        | F B Hewett             | New York         |
| Edward B Cottrell     | New Jersey    | R Russell Hogue        | Georgia          |
| Oscar B Crawford      | Pennsylvania  | Thomas C Hutchinson    | Iowa             |
| Robert Crawford       | Australia     | John L Jamison         | Ohio             |
| Wilbur B Cresswell    | Pennsylvania  | Bertha M Jarrett       | Pennsylvania     |
| J Maurice Crosby      | Canada        | Wm Jones               | New York         |
| Wm A Crow             | Canada        | Elton E Jordan         | Maine            |
| Wm N Daniels          | Massachusetts | Lewis H Kallach        | Rhode Island     |
| Jacques S David       | Roumania      | H P Kenney             | Canada           |
| Wm F Dohrmann         | California    | C J Kennerdell         | Pennsylvania     |

| NAME                     | RESIDENCE     |
|--------------------------|---------------|
| Chas A Kendall.....      | Canada        |
| James A Kent.....        | Minnesota     |
| Frank W Ketner.....      | Pennsylvania  |
| Howard Kingsbury.....    | Pennsylvania  |
| E L Lane.....            | Oregon        |
| Edgar D Larkin.....      | Pennsylvania  |
| Albert W Lavelli.....    | Connecticut   |
| Arthur Lemieux.....      | Canada        |
| T Segall Levien.....     | Russia        |
| Samuel Lobenstein.....   | Missouri      |
| Charles N Lord.....      | New York      |
| Frank R Lord.....        | New York      |
| F M Lynch.....           | Washington    |
| James A Lynch.....       | Massachusetts |
| Peter McGill.....        | New Jersey    |
| A P McInnis.....         | Minnesota     |
| John J McKinstry.....    | Pennsylvania  |
| A J L McKechnie.....     | Canada        |
| James A McLaren.....     | Canada        |
| P J Macdonald.....       | Massachusetts |
| Hugh S Mackay.....       | Canada        |
| Carl C Marggraff.....    | Connecticut   |
| W E Marshall.....        | Canada        |
| Chas F Meacham.....      | Vermont       |
| L D Mitchell.....        | Canada        |
| Harry C Moore.....       | Delaware      |
| E H Munger.....          | Connecticut   |
| Walter B Ousley.....     | Iowa          |
| E C Palmer.....          | Nebraska      |
| W Y Pearsoll.....        | Pennsylvania  |
| Mme Marie Pedemonte..... | Austria       |
| Oliver K Pellman.....    | Pennsylvania  |
| Edward J Pierce.....     | New York      |
| Glenn F Pollard.....     | New York      |

| NAME                     | RESIDENCE    |
|--------------------------|--------------|
| W Henry Povall.....      | New York     |
| J B Pressey.....         | New Jersey   |
| J W Purdy.....           | Canada       |
| R L Randall.....         | New York     |
| Adolph G Reinhardt.....  | Pennsylvania |
| C H Reynolds.....        | Pennsylvania |
| Henry W Richards.....    | Utah         |
| Duncan P Robertson.....  | Canada       |
| Jonas S Rosenthal.....   | Pennsylvania |
| Louis L Ruppert.....     | New Jersey   |
| David A Scobie.....      | New York     |
| G W Schock jr.....       | Pennsylvania |
| Maurice P Searle.....    | Ohio         |
| Frederick F Seavers..... | Minnesota    |
| W B Sherman.....         | California   |
| J C Shields jr.....      | Oregon       |
| Ella R Shinn.....        | New Jersey   |
| Edward Shothafer.....    | New York     |
| E R Simmons.....         | Germany      |
| John L Spanogle.....     | Pennsylvania |
| J Henry Stackhouse.....  | Canada       |
| Milo H Steele.....       | Canada       |
| Robert J Stevens.....    | Canada       |
| Margaret E Taylor.....   | Pennsylvania |
| Zane B Taylor.....       | Pennsylvania |
| D A Telfer.....          | Wisconsin    |
| Howard A Thomas.....     | Pennsylvania |
| George K Thomson.....    | Canada       |
| J Melville Thompson..... | New York     |
| Frank L Warren.....      | New York     |
| Hugh A Whytock.....      | Utah         |
| L N Wiley.....           | Connecticut  |
| Chas D Winsor.....       | Rhode Island |
| Wallace Wood jr.....     | Louisiana    |

Total, 142

### United States Dental College.

The second annual commencement exercises of the United States Dental College were held in Recital Hall, Auditorium, Chicago, Ills., March 24, 1892.

The opening address was delivered by W. B. Marcusson, A.M., M.D.; the doctorate address by J. J. M. Angear, A.M., M.D.; and the valedictory was delivered by G. C. Stephens.

The number of matriculates for the session was fifty-seven.

The degree of D.D.S. was conferred on the following graduates by the President:

| NAME.               |
|---------------------|
| Preston E Galloway  |
| Fred E Field        |
| Edwin E Newlin      |
| Frank A Carr        |
| Elmer O Sarber      |
| George C Stephens   |
| George H Richardson |

| NAME.             |
|-------------------|
| George J Marie    |
| Herbert R Johnson |
| Franklin A Fry    |
| C E Schuchert     |
| James C Rupert    |
| Elmer G Smith     |
| Joseph K Evans    |

Total, 14

## Baltimore College of Dental Surgery.

The fifty-second annual commencement exercises of the Baltimore College of Dental Surgery were held at the Lyceum Theatre, Baltimore, Md., Monday evening, March 21, 1892.

The annual oration was delivered by Rev. F. M. Ellis, and the valedictory by Philip Ernest Sasscer, of Maryland.

The number of matriculates for the session was one hundred and eighty-one.

The degree of D.D.S. was conferred on the following graduates by Prof. R. B. Winder, Dean of the College:

| NAME                           | RESIDENCE      | NAME                          | RESIDENCE      |
|--------------------------------|----------------|-------------------------------|----------------|
| Benj. Dorney Altemus.....      | Pennsylvania   | Robert Milton Krebs.....      | Pennsylvania   |
| Charles Wesley Arird.....      | Pennsylvania   | Joseph Edwin La Force.....    | Oregon         |
| John Neven Baker.....          | Pennsylvania   | Emmet T. H. Leonard.....      | Mississippi    |
| Irwin Joseph Beach.....        | Maryland       | James Isaac Logan.....        | Alabama        |
| William James Beatty.....      | Pennsylvania   | Wm. Samuel Long.....          | North Carolina |
| Chas. Alberto Bland.....       | North Carolina | Wm. Latimer Lowe.....         | Pennsylvania   |
| Chas. Wallace Boucher.....     | Maryland       | Henry Herbst Maloney.....     | A.M. Louisiana |
| Harvey V. Bradshaw.....        | Pennsylvania   | Edgar Watts Marvin.....       | Canada         |
| Baskerville Bridgforth.....    | Virginia       | James Walker Moore.....       | Canada         |
| Burt B. Brumbaugh.....         | Pennsylvania   | Simon Bernard Meyer.....      | Maryland       |
| James C. Buchanan.....         | Pennsylvania   | Patrick McCabe.....           | Australia      |
| Wm. Carpenter Callahan.....    | New York       | Chas. Covington McCloud.....  | Louisiana      |
| Walter Caldwell Carter.....    | Missouri       | George Bradley McFarland..... | E. India       |
| Fred. Abraham Charles.....     | Massachusetts  | Wm. Henry McGraw.....         | Pennsylvania   |
| Charles Alvin Coebel.....      | Maryland       | Peter Alexander McLean.....   | New Jersey     |
| Robert Steele Cole.....        | North Carolina | Ellis MacDougall.....         | New York       |
| Edwin Davis.....               | Pennsylvania   | John Elisha Parker.....       | Texas          |
| Wiley Clark Dawson.....        | West Virginia  | Leo Arthur Pusey.....         | Virginia       |
| Jacob William Derlin.....      | Maryland       | Edgar Knox Rainey.....        | Georgia        |
| John S. Donaldson, D.D.S.....  | Colorado       | Louis Ambrose Reinhart.....   | Maryland       |
| James R. Donaldson, D.D.S..... | Colorado       | Isaac Lemuel Ritter.....      | Pennsylvania   |
| Harry Donnan.....              | Pennsylvania   | Robert Ivey Robertson.....    | Canada         |
| Benjamin Franklin Dulaney..... | Texas          | Ryland Otey Sadler.....       | North Carolina |
| Nelson Henry Ehle.....         | Minnesota      | Philip Ernest Sasscer.....    | Maryland       |
| Mortimer Lewis Fay.....        | New York       | George Harvey Sayre.....      | New York       |
| Howard Roswell Fonda.....      | Vermont        | Albert Scott Shackelford..... | Texas          |
| Harley Brooks Ford.....        | Canada         | Zadoc Prescott Shaw.....      | Maine          |
| Fred. Allen Ford.....          | New York       | John Hartwell Smith.....      | Virginia       |
| Alexander Francis.....         | Maryland       | William Henry Stokes.....     | New York       |
| Isaac Abner Frazer.....        | California     | John Emerson Storey.....      | Texas          |
| John Newton Giddeons.....      | Alabama        | James Thomas Stuart.....      | Alabama        |
| Richard Lee Gill.....          | Maryland       | Wm. Wickham Sweezy.....       | New York       |
| Washington Irving Goodwin..... | Canada         | Wm. Avdelotte Taylor.....     | Maryland       |
| Harry White Graham.....        | Pennsylvania   | Fred. Aubrey Taylor.....      | Canada         |
| Archer C. Griffith.....        | California     | Clarence Hervey Terry.....    | Texas          |
| Emile Grosheintz, D.D.S.....   | Switzerland    | William Poole Terry.....      | Louisiana      |
| Clarkson Newberry Guyer.....   | Colorado       | Albert Galiton Tillman.....   | Mississippi    |
| George Felder Hair.....        | South Carolina | Eduardo Vasquez.....          | Guat a         |
| Charles Elward Hamilton.....   | Georgia        | Henry Augustin Truxillo.....  | Louisiana      |
| Wm. Irvine Hatch, B.A.....     | South Carolina | William Henry Walters.....    | Maryland       |
| Julio Hidalgo.....             | Venez a        | Thomas Frederick Warnes.....  | New York       |
| W. S. Holbrook.....            | New Jersey     | Joseph D. Whiteman.....       | Pennsylvania   |
| Frank Harper Jackman.....      | Connecticut    | Edgar Lucis Wilder.....       | Vermont        |
| Alexander Jefekfalusy.....     | Wisconsin      | Benjamin Hicks Williams.....  | Georgia        |
| George Marshall Jones.....     | Iowa           | David Morris Wilson.....      | New York       |
| Earnest Paul Keerans.....      | North Carolina | Charlie Harvey Winburn.....   | Georgia        |
| Clinton Kenney.....            | Connecticut    | James Isaiah Woolverton.....  | New Jersey     |
| Frederick Henry Kestler.....   | California     | Frederie William Wright.....  | Canada         |
| Edward Thomas Ketcham.....     | California     | James Anderson Yates.....     | Kentucky       |
| Harry Wilson Knauff.....       | Pennsylvania   | Robert Irving Youngs.....     | New York       |
| Milo Dempsey Kottraba.....     | Pennsylvania   | Rudolph Louis Zelenka.....    | Louisiana      |
|                                |                | Total, 102.                   |                |

### Southern Medical College—Dental Department.

The Fifth Annual Commencement Exercises of the Southern Dental College were held at Dan'l Give's Opera House, Atlanta, Ga., on February 29, 1892.

The number of matriculates for the session was ninety-eight.

The Valedictory was delivered by W. S. Trent, D.D.S., of Alabama.

The degree of D.D.S. was conferred by the President, T. S. Powell, M.D., on the following persons:

| NAME                   | RESIDENCE      | NAME                  | RESIDENCE      |
|------------------------|----------------|-----------------------|----------------|
| W. E. Buy .....        | Georgia        | T. R. Jones .....     | Georgia        |
| C. M. Bess .....       | North Carolina | E. N. Kibler .....    | South Carolina |
| W. L. Bethea .....     | Georgia        | T. D. Leonard .....   | South Carolina |
| W. A. Blazenzame ..... | Georgia        | G. R. Lovelace .....  | South Carolina |
| C. C. Burbank .....    | Texas          | W. C. Morgan .....    | Florida        |
| H. W. Carpenter .....  | Georgia        | W. G. Mason .....     | Georgia        |
| W. L. Cason .....      | Georgia        | W. F. Moore .....     | Texas          |
| T. D. Coty .....       | Louisiana      | C. Merrilliad .....   | Louisiana      |
| W. B. Cone .....       | Florida        | J. C. Powell .....    | Georgia        |
| J. E. Cramer .....     | Georgia        | S. O. Poore .....     | Georgia        |
| J. H. Cates .....      | Georgia        | A. C. Parry .....     | Georgia        |
| J. L. Dean .....       | South Carolina | A. A. Patterson ..... | South Carolina |
| G. W. Davis .....      | Georgia        | R. A. Patterson ..... | Georgia        |
| W. A. Ellis .....      | North Carolina | C. C. Parish .....    | Georgia        |
| O. E. Griffin .....    | Georgia        | T. R. Robbins .....   | Alabama        |
| Z. Greene .....        | Alabama        | J. R. Rountree .....  | Georgia        |
| G. K. Hawley .....     | Connecticut    | J. C. Smith .....     | Georgia        |
| W. L. Hightower .....  | Alabama        | D. M. Snelson .....   | Georgia        |
| J. G. Heard .....      | Alabama        | W. H. Spinks .....    | Texas          |
| J. J. Hendley .....    | Georgia        | W. A. Summerlin ..... | Georgia        |
| T. W. Henderson .....  | Georgia        | F. H. Smith .....     | Mississippi    |
| F. A. Henley .....     | North Carolina | G. D. Stovall .....   | Alabama        |
| H. R. Jewett .....     | Georgia        | W. S. Trent .....     | Alabama        |
| A. M. Jackson .....    | Georgia        | W. E. Wheeler .....   | Tennessee      |
| R. P. Jackson .....    | Georgia        | J. R. Warren .....    | Georgia        |
| A. M. Jamerson .....   | Georgia        | Total, 51.            |                |

### Meharry Medical College—Dental Department.

The Sixth Annual Commencement of the Dental Department of the Meharry Medical College was held in connection with that of the Medical and Pharmaceutical Departments, at Nashville, Tenn., on February 18, 1892.

George W. Miller, of the Medical Class, gave the address of welcome, and J. W. Holmes delivered the Valedictory.

During the past session seven students have been enrolled in the Dental Department.

President J. Braden conferred the degree of Doctor of Dental Surgery on J. B. Singleton, of South Carolina.

## Missouri Dental College.

The twenty-sixth annual commencement exercises of the Dental Department of Washington University, were held in connection with those of the St. Louis Medical College, at Memorial Hall, St. Louis, Mo., on Thursday, March 10, 1892.

Prof. Wm. Townsend Porter delivered the address to the class.

The number of matriculates for the session was seventy-seven.

Chancellor Chaplin of the University conferred the degree of D.D.S. upon the following graduates:

| NAME                 | RESIDENCE | NAME                    | RESIDENCE   |
|----------------------|-----------|-------------------------|-------------|
| F. H. Achelpohl..... | Missouri  | W. Kalbfleisch.....     | Illinois    |
| G. W. Applegate..... | Missouri  | A. Lambert.....         | Illinois    |
| O. W. Bedell.....    | Ohio      | A. N. Milster.....      | Missouri    |
| J. L. Bridgford..... | Missouri  | O. Mallinckrodt.....    | Missouri    |
| O. F. Burton.....    | Missouri  | A. T. Moser.....        | Missouri    |
| H. F. Cassell.....   | Missouri  | C. Muetze.....          | Missouri    |
| I. B. Coil.....      | Missouri  | O. H. Manhard.....      | Missouri    |
| C. C. Cowdery.....   | Ohio      | H. F. Naumann.....      | Missouri    |
| W. G. Cox.....       | Missouri  | J. L. Perry.....        | Illinois    |
| W. G. Goodrich.....  | Missouri  | W. L. Pruett.....       | Missouri    |
| L. E. Gordon.....    | Illinois  | W. F. Schwaner.....     | Iowa        |
| C. G. Hampton.....   | Missouri  | E. Schaer.....          | Switzerland |
| R. J. Hart.....      | Wisconsin | T. Trotter.....         | Missouri    |
| T. D. Head.....      | Missouri  | W. G. Teel.....         | Virginia    |
| E. M. Hurd.....      | Nebraska  | H. G. G. Van Aller..... | Germany     |
| W. P. Inglish.....   | Missouri  | F. F. Worthen.....      | Illinois    |
| S. Jacoby.....       | Missouri  | Total, 33               |             |

## Cincinnati College of Medicine and Surgery—Dental Department.

The first annual commencement of the Dental Department of the Cincinnati College of Medicine and Surgery, was held at the Y. M. C. A. Hall, on Wednesday evening, March 16, 1892.

The opening address was delivered by Prof. G. S. Junkerman, M.D., D.D.S., Dean of the Faculty; and the Valedictory by Prof. A. I. F. Buxbaum, M.D., D.D.S.

The number of matriculates for the session was thirty-four.

The degree of D.D.S., was conferred on the following graduates by Prof. Geo. W. Harper, President of the Board of Trustees:

| NAME                         | RESIDENCE | NAME                       | RESIDENCE    |
|------------------------------|-----------|----------------------------|--------------|
| Sam. H. Wardle.....          | Ohio      | Fred. G. Williams.....     | Ohio         |
| B. Frank Corwin.....         | Ohio      | Ernest Bragdon, M. D.....  | Ohio         |
| C. E. Sibbet.....            | Ohio      | Wm. Francis Sloan.....     | Pennsylvania |
| J. F. Clayton.....           | Ohio      | G. W. Hoffman.....         | Ohio         |
| James Franklin McCamant..... | Ohio      | John C. Wallace, M. D..... | Michigan     |

Total, 10

## Chicago College of Dental Surgery.

The tenth annual commencement exercises of the Chicago College of Dental Surgery (Dental Department of the Lake Forest University) were held at the Columbia Theatre, Chicago, Ill., on Tuesday, March 22, 1892, at 2:30 P. M.

The annual address was delivered by W. C. Roberts, D.D., LL.D., President of the University, and the doctorate address by C. N. Johnson, L.D.S., D.D.S.

The number of matriculates for the session was three hundred and three.

The degree of D.D.S. was conferred on the following graduates by Truman W. Brophy, M.D., D.D.S., Dean of the College:

## NAME.

Albert Bromley Allen  
 Clarence Edson Allshouse  
 George Henry Anderson  
 Gustave Edward Anderson  
 Hubbard Gail Atwater  
 Ernest Allin  
 Manning Andrus Birge  
 Thomas Jefferson Borland  
 Jabez Bunting Burns  
 John L Bingham  
 Lemuel Fairfax Buck  
 Calvin Fergeson Besore  
 Albert Leslie Bents  
 Samuel Hardesty Baker  
 Mark Robert Brierly  
 Benjamin Dornblazer Barber  
 John William Beetham  
 Frank Carlton Colby  
 Charles Robert Currier  
 Harlow Arthur Cross  
 Curtis Hammond Coe  
 Frank L Condit  
 Bert C Campbell  
 John Corwin  
 Robert Clark Coy  
 Herbert Armstrong Carson  
 Orie George Collins  
 Albert Paul Condon  
 Amos Winship Dana  
 Will Conger Dunn  
 James House Davis  
 Claude Howard Devereaux  
 Frank Elmer David  
 Hiram Darling  
 Lewis Mathias Doerr  
 Henry Wallis Ewing  
 Albert Eugene Eagles  
 William Edgar Ervin  
 Walter Howard Fox  
 Lewis Eugene Ford  
 Allen Joseph Freeman  
 Frank Orin Finley  
 Herman Peter Fischer  
 Lawrence Sylvester Fezer

## NAME.

George Emil Franke  
 Edward M S Fernandez  
 George Ramsey Guild  
 John J Geary  
 Robert Good  
 Jeremiah Gochenour  
 Francis Marion Gray  
 Alfred J Homfeld  
 Julian Frank Hixon  
 Augustus Finley Henning  
 A Gallagher Hebbard  
 Marion L Higgins  
 Robert Anderson Howell  
 Fred Armstrong Ironside  
 Albert Hamilton Johnston  
 Albert George Johnson  
 Austin Flint James  
 Frank King  
 Ernest Venzel Kautsky  
 William Frederick Leu  
 Lewis Schuyler LaPierre  
 Frank Leslie Lane  
 William Arthur Lewis  
 Hallvard Lie  
 William Cutler Lumpkin  
 Oscar Edward Meyer  
 John Franklin McCrear  
 William Ephraim Martin  
 Herman Minges  
 John Simpson McQueen  
 John Benedict Mason  
 Henry Bruce Meade  
 Walter John Morrow  
 John Henry Muenster  
 Samuel Alexander Nielson  
 Bert Newsome  
 James Toberman New  
 John Egbert Nyman  
 Charles H Oakman  
 Charles Fremont Palmer  
 Albert James Prescott  
 James Lyon Palmer  
 William Abraham Penn  
 Franklin Pfeiffer

NAME  
 George Thomas Page  
 John Dominic Purcell  
 William Conover Parsons  
 Frank Everett Phillips  
 George Samuel Root  
 Dennis Herbert Rowells  
 Fred Emerson Reynolds  
 Charles Bennett Reynolds  
 James Arnold Reynolds  
 William Woods Robbins  
 Joseph Herbert Robinson  
 Victor Hugo Rea  
 Edgar Miner Richards  
 Robert Hutchison Robertson  
 Omro Elmer Severance  
 Bertram Grey Smith  
 Ard Patterson Smith  
 Fred John Staehle  
 George McKay Sutherland  
 Sylvester Elmer Stouffer

NAME  
 John Franklin Stephan  
 James Byron Stuck  
 Jeffrey Springle  
 Carl Oscar Wilhelm Schycker  
 Sebastian Ricardo Salazar  
 Paul Steinberg  
 Arthur George Tibbitts  
 Richard Elmer Thexton  
 Edgar Felker Thomas  
 Herbert Hawkesworth Tyler  
 Edward Robert Victor  
 Matthew Wilson  
 Hans Bastian Wiborg  
 James Abram Welsch  
 Clarence Walter Williams  
 Charles Albert Wedge  
 Fred H Wallace  
 Frank Pierce Welch  
 William F Whalen  
 Louvain Alden Werden

Total, 128

### Kansas City Dental College.

The Tenth Annual Commencement of the Kansas City Dental College was held in Grand Avenue M. E. Church, Kansas City, Mo., on March 4, 1892.

The Faculty address was delivered by Prof. Theo. Stanley, and an address was also delivered by Rev. J. E. Roberts.

The number of matriculates for the session was eighty-seven.

The degree of D.D.S. was conferred on the following graduates by Dr. L. C. Wasson, President of the College Association :

NAME  
 Charles William Day  
 David Kerr Bryson  
 Harry Baile Engel  
 Harry Mitchell Doyle  
 Charles Willetts Thompson  
 Henry Wilfred Kelly  
 Alanson Tuttle Havely  
 William Amos McKee  
 Frank M Blake  
 Johann Christian Buttner  
 Ernest Prindel Noble  
 Jefferson Davis Barton  
 Harry Hurt Turner  
 Robert Edgar Barton  
 Oliver Tennyson Griner  
 Arthur Hoffman Bagby  
 John Malcolm Campbell  
 Frank Lincoln Williams  
 James Daniel Neff  
 Irwin Wilson Dills  
 James William O'Bryon  
 James Whitehill Butt  
 John Howell Jenkins  
 Ned Elmore White  
 John George Alexander Kydd

NAME  
 Arthur Monroe Tutt  
 Martin Henry Hopfer  
 George Leon Tetrick  
 Samuel Joseph Renz  
 John Bratton Woodside  
 Walter Emmitt Highnote  
 Daniel Franklin Pendleton  
 George Washington Amerman  
 Ludwig Henning Bredouw  
 Fred Lewis Cobb  
 Frank Lenoir Carter  
 Mark Chester Lovell  
 James Henry Goodwin  
 Gustavus Montgomery Cross  
 Amasa Molton Farnham  
 Woodson Thompson Smith  
 Ole Anderson Smith  
 Schuyler Colfax Grant  
 Fred Pierce Cronkite  
 George Daniel Mitchell  
 Pitts Elmore Wilhite  
 Clifford Howell Nelson  
 Henry Eugene Lindas  
 Arthur Lee Lindsey  
 Eugene Aquilla Chase

Total, 50

## University of Iowa—Dental Department.

The Tenth Annual Commencement of the Dental Department of the State University of Iowa was held in the Armory, Iowa City, Iowa, on Thursday evening, March 10, 1892.

The annual address was delivered by John J. R. Patrick, M.D., D.D.S.

The degree of D.D.S. was conferred on the following persons by the President, Charles A. Schaeffer, Ph. D. :

| NAME                | RESIDENCE       | NAME                 | RESIDENCE         |
|---------------------|-----------------|----------------------|-------------------|
| M F Anderson .....  | Muscatine       | Harry Kelso.....     | Ames              |
| Fred Anderegg ..... | Mankato, Minn   | E W Kerr .....       | Newton            |
| H W Anger.....      | Brooklyn        | C B Miller.....      | Waterloo          |
| R N Baker .....     | Iowa City       | J G McCartney.....   | Mitchell, S Dak   |
| J W Ball.....       | Delaware        | H C McCrear.....     | Greenfield        |
| F A Boysen .....    | Dubuque         | E S McWhorter .....  | Canon City        |
| Hugo Braun .....    | Davenport       | Miss O A Otte .....  | Peabody, Kas      |
| H W Baldwin .....   | Oconomowoc, Wis | Miss Julia Otte..... | Peabody, Kas      |
| M Brennan .....     | Ashland, Wis    | Miss A E Owens.....  | Parkersburg       |
| J C Braley .....    | Harvey, Ills    | W H Pallett .....    | Dorchester, Neb   |
| C P Burt.....       | Elwood, Ills    | W W Perry.....       | Elizabeth, Ills   |
| E H Ball .....      | Philips, Neb    | B A Price.....       | Afton             |
| M H Breen.....      | LeMars          | H R Pasedach.....    | Tipton            |
| J F Curry.....      | Friendship, N Y | G F Pratt .....      | Red Oak           |
| F P Chapman.....    | Clarinda, Ia    | E A Rogers.....      | Vinton            |
| W A Dredge.....     | Amboy, Minn     | H F Randolph.....    | Belle Plaine      |
| C F Dwight.....     | Marcus          | G H Reynolds .....   | Binghamton, N Y   |
| E S Jenbo .....     | Corydon, Ind    | H C Shoemaker .....  | Muscatine         |
| L A Grigsby.....    | Lena, Ills      | Wm Schlawig.....     | Sioux City        |
| J C Holson.....     | Iowa City       | W G Skidmore.....    | Moline, Ills      |
| J C Hullinger.....  | DeWitt          | J E Stinehart .....  | Iowa City         |
| W S Hosford .....   | Iowa City       | T S Stanford .....   | Cambridgeboro, Pa |
| M A Humphrey.....   | Minona, Ia      | S R Swain.....       | Iowa City         |
| T B Heckert .....   | Red Oak, Ia     | O H Sossaman.....    | Waterloo          |
| D A Haines.....     | Decorah         | F A Strayer.....     | Jefferson         |
| L G Holmes .....    | Birmingham      | M W Warner.....      | Parkersburg       |
| H M Harlan.....     | Seymour         | R J Wilson.....      | Oelwein           |
| M A H Jones.....    | Iowa City       | F R Wright.....      | Morning Sun       |
| C H Jacobs.....     | Colesburg       |                      |                   |
|                     |                 |                      | Total, 57         |

## Royal College of Dental Surgeons of Ontario.

The number of matriculates for the session at the Royal College of Dental Surgeons of Ontario was sixty-four.

After the examination the title of L.D.S. (Licentiate of Dental Surgery) was conferred upon the following :

| NAME                    | RESIDENCE  | NAME                      | RESIDENCE  |
|-------------------------|------------|---------------------------|------------|
| S A Aykroyd.....        | Kingston   | H C Lake.....             | Toronto    |
| R Agnew.....            | Clinton    | M A Morrison.....         | Peterboro  |
| S Anderson.....         | Mitchell   | G J Musgrove.....         | Wingham    |
| E A Billings.....       | Leamington | F D Price.....            | Napanee    |
| J A Black.....          | Kingston   | F B Ross .....            | Hamilton   |
| W A Burns.....          | St Thomas  | D C Smith.....            | Uxbridge   |
| J A Edwards, D.D.S..... | Uxbridge   | T C Trigger .....         | St. Thomas |
| J H Fell.....           | Burlington | G A Walters.....          | Forest     |
| Herman Hart.....        | Lindsay    | W R Wilkinson, D.D.S..... | Elmira     |
| H F Kinsman.....        | Exeter     | S C Wilson, D.D.S.....    | Illinois   |
| F A Lackner, D.D.S..... | Berlin     |                           |            |
|                         |            |                           | Total, 21  |

## Columbian University—Dental Department.

The Fifth Annual Commencement Exercises of the Dental Department of the Columbian University were held, in connection with those of the Medical Department, at Albaugh's Opera House, Washington, D. C., on Thursday, March 17, 1892, at 2:30 P. M.

The address to the Dental Graduates was delivered by John B. Rich, D.D.S.

The number of matriculates for the session was thirty-five.

The degree of D.D.S. was conferred on the following graduates by President J. C. Welling, LL. D. :

| NAME                             | RESIDENCE            | NAME                 | RESIDENCE |
|----------------------------------|----------------------|----------------------|-----------|
| John H Burch....                 | District of Columbia | Geo H Townsend.....  | Virginia  |
| Wm L Clark.....                  | District of Columbia | Carl Trede, M.D..... | Germany   |
| Alva Sigel Roush, A.M., M.D. ... | Ohio                 | Total, 5             |           |

## Western Dental College of Kansas City.

The Second Annual Commencement of the Western Dental College was held in the Music Hall, Kansas City, Mo., on the evening of March 10, 1892.

The Faculty address was delivered by Prof. H. O. Hanawalt.

The number of matriculates for the session was seventy-nine.

The degree of D.D.S. was conferred on the following graduates :

| NAME                 | RESIDENCE | NAME                 | RESIDENCE |
|----------------------|-----------|----------------------|-----------|
| L P Austin.....      | New York  | Otto Jacobs .....    | Missouri  |
| K P Ashley.....      | Kansas    | O J Keuper .....     | Missouri  |
| W C Allen.....       | Missouri  | C B Leavel.....      | Missouri  |
| E C Brownlie .....   | Missouri  | I B Nordyke.....     | Missouri  |
| A C Barr.....        | Illinois  | P J Oreiley.....     | Missouri  |
| W H Condit .....     | Kansas    | S T Peter.....       | Nebraska  |
| T H Cunningham ..... | Missouri  | C Robertson, jr..... | Kansas    |
| F W Drom.....        | Nebraska  | J F Spence.....      | Missouri  |
| R E Darby.....       | Missouri  | J H Swan .....       | Missouri  |
| Fred W Franklin..... | Missouri  | H H Sullivan.....    | Missouri  |
| F E Gaines.....      | Missouri  | W W Simpson.....     | Kansas    |
| T J Herkins.....     | Kansas    | A L Smith.....       | Missouri  |
| T I Hatfield.....    | Kansas    | E C Taylor.....      | Missouri  |
| D J Hayden .....     | Kansas    | M D Vanhorn.....     | Illinois  |
| Wm Harrison.....     | Nebraska  | O C West .....       | Missouri  |
| C C Jones .....      | Kansas    | Frank S Webster..... | Kansas    |
| L G Jones.....       | Kansas    | A S Wright.....      | Missouri  |
| S E Johnson .....    | Kansas    | H Yant.....          | Kansas    |
| F W Johnson.....     | Missouri  | Mrs Alice Yant ..... | Kansas    |

Total, 38

### Tennessee Medical College—Dental Department.

The third annual commencement of the Dental Department of the Tennessee Medical College was held in connection with that of the Medical Department, at Staubs' Theatre, Knoxville, Tenn., Thursday evening, March 17, 1892.

After the usual exercises the degree of D.D.S. was conferred on the following persons :

| NAME                | RESIDENCE | NAME                  | RESIDENCE      |
|---------------------|-----------|-----------------------|----------------|
| S. Bennett.....     | Tennessee | E. B. Pennington..... | Tennessee      |
| T. R. Donnelly..... | Tennessee | G. R. Rouse.....      | South Carolina |
| B. F. Scott.....    | Tennessee | J. G. Foley.....      | Kentucky       |
| David Rees.....     | Tennessee | J. H. McCallie.....   | Idaho          |
| Total, 8.           |           |                       |                |

### Pennsylvania College of Dental Surgery.

The thirty-sixth annual commencement exercises of the Pennsylvania College of Dental Surgery were held at the American Academy of Music, Philadelphia, Pa., on Wednesday evening, March 2, 1892, at 8 o'clock.

The annual address was delivered by Professor Albert P. Brubaker, M.D., D.D.S.

The number of matriculates for the session was two hundred and seven.

The degree of D.D.S. was conferred on the following graduates by L. Minis Hayes, M.D., President of the Board of Corporators :

| NAME                     | RESIDENCE     | NAME                    | RESIDENCE      |
|--------------------------|---------------|-------------------------|----------------|
| C. E. Algeire.....       | New York      | Henry Fischer.....      | Germany        |
| C. M. Ashton.....        | Pennsylvania  | L. H. Franz.....        | Pennsylvania   |
| A. R. Atwood.....        | New Jersey    | C. E. Foster.....       | New Hampshire  |
| Edwin Banton.....        | New York      | Emilio Galvis.....      | Colombia, S. A |
| H. Baumgartner.....      | Pennsylvania  | Wm. Glading.....        | Pennsylvania   |
| Caleb Bird.....          | New York      | W. B. Gearhart.....     | Pennsylvania   |
| Edith L. Brown.....      | Pennsylvania  | W. C. Griffith.....     | Pennsylvania   |
| H. S. Brown.....         | Pennsylvania  | Geo. F. A. Graf.....    | New York       |
| Sylvester Byrne, jr..... | Pennsylvania  | C. H. Green.....        | Delaware       |
| Thos. H. Carr.....       | New York      | Mayo A. Greenlaw.....   | California     |
| D. H. Covert.....        | Canada        | W. C. Gutelius.....     | Pennsylvania   |
| C. C. Corbiere.....      | California    | F. E. Gutelius.....     | Pennsylvania   |
| C. J. Chambers.....      | Pennsylvania  | A. J. Hamm.....         | Massachusetts  |
| S. S. Crow.....          | Missouri      | Josiah Hartzell.....    | Ohio           |
| John Davenport.....      | Pennsylvania  | Mittie Tudor Haley..... | Virginia       |
| A. R. Day.....           | New York      | E. B. Heston.....       | Pennsylvania   |
| W. H. Deal.....          | New York      | Luther Hogarth.....     | Canada         |
| George Doerbecker.....   | Illinois      | Edwin Hollenback.....   | Pennsylvania   |
| Geo. R. Drew.....        | Massachusetts | C. A. Hottenstein.....  | Pennsylvania   |
| H. J. Fleming.....       | Pennsylvania  | Alice Jarvis.....       | Michigan       |

| NAME                   | RESIDENCE      |
|------------------------|----------------|
| Mary Jaffe .....       | Russia         |
| Samuel Johnson .....   | New Jersey     |
| M. W. Jennings .....   | Pennsylvania   |
| A. H. Keats .....      | Minnesota      |
| Mary E. Keyser .....   | Pennsylvania   |
| George Kumpf .....     | Canada         |
| H. H. Kuhn .....       | Maryland       |
| W. H. Lancaster .....  | Connecticut    |
| P. L. Longnecker ..... | Pennsylvania   |
| M. W. Maratta .....    | Pennsylvania   |
| O. J. Marcy .....      | Pennsylvania   |
| Jeannie Maguin .....   | Germany        |
| W. C. McCarthy .....   | New York       |
| G. S. McDowell .....   | Pennsylvania   |
| Joe. E. Mitinger ..... | Pennsylvania   |
| G. A. Miller .....     | Pennsylvania   |
| E. L. Moore .....      | Pennsylvania   |
| W. A. May .....        | Canada         |
| D. H. Morgan .....     | Ohio           |
| T. D. Morrison .....   | Kentucky       |
| D. A. Myers .....      | Pennsylvania   |
| Girardo Nunez .....    | Colombia, S. A |
| J. C. Nolen .....      | Pennsylvania   |
| C. L. Pearson .....    | New York       |
| R. B. Pealer .....     | Pennsylvania   |
| J. R. Powell .....     | New York       |
| Pauline Prime .....    | New York       |
| Raul Ramos .....       | Cuba           |
| Samuel Rankin .....    | Pennsylvania   |
| W. A. Robb .....       | Pennsylvania   |
| Joquin Restrepo .....  | Colombia, S. A |
| J. C. Reynolds .....   | Pennsylvania   |

| NAME                      | RESIDENCE    |
|---------------------------|--------------|
| E. C. Rice .....          | Pennsylvania |
| Oswaldo Ros .....         | Cuba         |
| J. H. Ross .....          | Missouri     |
| J. W. Ross .....          | Pennsylvania |
| W. J. Roe .....           | Canada       |
| J. H. Russell .....       | Pennsylvania |
| W. A. Russell .....       | Pennsylvania |
| J. P. Sager .....         | Pennsylvania |
| Sophie T. Satinover ..... | Roumania     |
| F. W. Shepherd .....      | Wisconsin    |
| Ivar Siqoveland .....     | Minnesota    |
| E. M. Slonaker .....      | Pennsylvania |
| J. H. Slaughter .....     | New Jersey   |
| M. W. Snow .....          | Utah         |
| O. W. Snow .....          | Utah         |
| Martha Sochatzey .....    | Germany      |
| Thad. Stine .....         | Pennsylvania |
| M. A. Street .....        | New Jersey   |
| C. S. Street .....        | New Jersey   |
| E. A. Talmage .....       | Pennsylvania |
| F. W. Tate .....          | New York     |
| L. G. Terry .....         | New York     |
| John Toprahanian .....    | Turkey       |
| J. W. Todd .....          | Pennsylvania |
| Archie V. Toy .....       | Pennsylvania |
| G. A. Vandersluis .....   | Minnesota    |
| C. E. Wade .....          | Pennsylvania |
| E. F. Wayne .....         | Pennsylvania |
| J. H. Wardlaw .....       | Canada       |
| G. M. Weirich .....       | Pennsylvania |
| E. C. Wiley .....         | Pennsylvania |
| Total, 103                |              |

### University of Maryland—Dental Department.

The annual commencement exercises of the Department of Dental Surgery of the University of Maryland were held at the Lyceum Theatre, Baltimore, Md., on Thursday, March 17, 1892.

The mandamus was read by the Dean, Prof. Ferdinand J. S. Gorgas, M.D., D.D.S.; the address to the graduates was delivered by Rev. William T. Roberts, of Virginia; and the class oration by H. Janney Nichols, of Virginia.

The number of matriculates for the session was one hundred and twenty-seven.

The degree of D.D.S. was conferred on the following graduates by Hon. S. Teackle Wallis, LL.D., Provost of the University.

| NAME                      | RESIDENCE  |
|---------------------------|------------|
| W Wolsley Alton .....     | Canada     |
| Walter C Anderson .....   | Virginia   |
| Fletcher G Asbill .....   | S Carolina |
| Dabney G Barnitz .....    | Virginia   |
| Charles F Baylis .....    | New York   |
| John C C Beale .....      | Maryland   |
| Alexander J Beville ..... | Texas      |

| NAME                         | RESIDENCE    |
|------------------------------|--------------|
| Samuel E Braendle .....      | Canada       |
| Winfield S Burd .....        | Pennsylvania |
| Andrew S Burke .....         | Pennsylvania |
| W Bolivar Byers .....        | S Carolina   |
| E Marcellus Copenhaver ..... | Virginia     |
| W Felton Deekens .....       | Virginia     |
| J Harry Deems, jr. ....      | Maryland     |

| NAME                          | RESIDENCE    | NAME                         | RESIDENCE    |
|-------------------------------|--------------|------------------------------|--------------|
| William W Dennis .....        | Georgia      | H Janney Nichols .....       | Virginia     |
| John H Diddle .....           | W Virginia   | Clyde Sylvanus Payne .....   | California   |
| William E Dobson .....        | New York     | George C Probst .....        | S Carolina   |
| John Lyons Doremus .....      | France       | George B Quinlan .....       | New York     |
| Eben B Edgers .....           | Vermont      | Turner A Ramey .....         | W Virginia   |
| Robert W Eicholtz .....       | Pennsylvania | Joseph L Rathie .....        | Virginia     |
| Louis Ewig .....              | Switzerland  | E Edington Reynolds .....    | New York     |
| C Dixie Farriss .....         | Georgia      | Jacob Riser .....            | Iowa         |
| Lawrence S Fox .....          | N Carolina   | Edmund D Shaw .....          | New York     |
| Edwin J Gill .....            | N Carolina   | James W Simpson .....        | Virginia     |
| Eli Harmon Glascock .....     | Missouri     | Will R Simpson .....         | S Carolina   |
| George H Hargrove .....       | S Carolina   | Harry Blackburn Smith .....  | Bermuda      |
| Oscar J Harmon .....          | N Hampshire  | Charles B Stouffer .....     | Pennsylvania |
| Lewis E Hess .....            | Maryland     | M Emmert Stover .....        | Pennsylvania |
| Frederick C Humbert .....     | Maryland     | Arthur O Thomas .....        | S Carolina   |
| Hugh Barbour Hutchison .....  | Virginia     | William A Thrush .....       | Illinois     |
| Benjamin L Jefferson .....    | Georgia      | Die P Tipton .....           | Nebraska     |
| Silas J Johnson .....         | Virginia     | Arminius W Totten .....      | N Carolina   |
| B Arthur Jordan .....         | California   | William H Van Nostrand ..... | New York     |
| James M King .....            | Canada       | Harry Van Tassel .....       | South Dakota |
| C Rogers LeFevre .....        | Maryland     | Joseph M Veza .....          | Austria      |
| J Clinton Macomber .....      | Pennsylvania | Frank Von Wachter .....      | Maryland     |
| Thomas Rollins Marshall ..... | Virginia     | J Willie Watson .....        | W Virginia   |
| Anthony H Mathieu .....       | Maryland     | Montgomery Lewis White ..... | Texas        |
| W Glenn McGee .....           | S Carolina   | Charles G Wiley .....        | Pennsylvania |
| George A McGuire .....        | Canada       | Henry A Wilson .....         | Maryland     |
| Robert J McHarg .....         | Canada       | Edward Kirk Woods .....      | N Hampshire  |
| J Morton McIlvaine .....      | Maryland     | A Watson Woodward .....      | Virginia     |
| C Augustus Mitchell .....     | New York     | J Harvey Wool .....          | Virginia     |
| Harry B Mitchell .....        | New York     | Total, 75                    |              |

### University of California—College of Dentistry.

The annual commencement exercises of the College of Dentistry of the University of California were held at Odd Fellows' Hall, Wednesday evening, December 23, 1891. The term closed December 31st.

The number of matriculates for the session was ninety-eight.

The address on behalf of the Faculty was delivered by Leander Van Orden, jr., M.D.

The degree of D.D.S. was conferred on the following graduates by Prof. Clark L. Goddard, A.M., D.D.S., Chairman of the Faculty:

| NWME                            | RESIDENCE  | NAME                          | RESIDENCE  |
|---------------------------------|------------|-------------------------------|------------|
| Josephine W. Armstrong .....    | California | Charles Evans Meek .....      | California |
| Charles Franklin Bauer .....    | California | Albert D. E. Milds .....      | California |
| Charles Henry Bell .....        | California | Robert Forrester Millar ..... | California |
| John Millard Blodgett .....     | California | Robert Isaac Moore .....      | California |
| Cecil Corwin .....              | California | Howard Deloss Noble .....     | California |
| D. Carter Elliot .....          | California | Forrest Hoy Orton .....       | Minnesota  |
| Philip Foster Frear .....       | California | Frank Harry Phillips .....    | California |
| Charles Lawrence Griswold ..... | California | Harry Griffin Richards .....  | California |
| Charles George Hyde .....       | California | Harold Lawrence -eager .....  | California |
| Edwin Chandler Hyde .....       | Oregon     | Harry Howard Shaw .....       | California |
| William Martin .....            | India      | Geo. Newins Van Orden .....   | California |
| John Patrick McCarty .....      | California | Gustavus Adolphus Weyer ..... | California |
|                                 |            | Total, 24                     |            |

### Indiana Dental College.

The thirteenth annual commencement of the Indiana Dental College was held on Tuesday evening, March 1, 1892, at Englishs Opera House, Indianapolis.

A very interesting address on "The Sun", illustrated with fifty stereopticon views, was delivered by President John, of De Pauw University.

The degree of D.D.S. was conferred on the following graduates:

| NAME.                 | RESIDENCE | NAME.                  | RESIDENCE  |
|-----------------------|-----------|------------------------|------------|
| W. Anderson.....      | Minnesota | D. L. Lucas.....       | California |
| W. G. Burket.....     | Indiana   | D. B. Lockhart.....    | Indiana    |
| B. F. Batson.....     | Illinois  | J. O. Miessen.....     | Indiana    |
| G. W. Burch.....      | Nebraska  | P. N. Malm.....        | Minnesota  |
| C. E. Burket.....     | Indiana   | W. J. Morris.....      | Indiana    |
| Orlando Burns.....    | Indiana   | W. L. McNamara.....    | Ohio       |
| J. H. Bloor.....      | Ohio      | Chas. B. Pletcher..... | Indiana    |
| W. J. Bradbury.....   | Wisconsin | A. A. Powell.....      | Indiana    |
| G. G. Billman.....    | Indiana   | E. E. Pierce.....      | Indiana    |
| H. M. Brown.....      | Illinois  | D. L. Prall.....       | Indiana    |
| W. T. Clarke.....     | Texas     | P. A. Rood.....        | Indiana    |
| Harry Corken.....     | Ohio      | Claude V. Runyan.....  | Indiana    |
| W. E. Diley.....      | Indiana   | M. A. Root.....        | Michigan   |
| H. D. Dewar.....      | Michigan  | W. B. Ridgeway.....    | Indiana    |
| D. A. Elwell.....     | Ohio      | Elmer A. Smythe.....   | Indiana    |
| G. C. Fleischman..... | Wisconsin | R. W. Sessions.....    | Indiana    |
| W. A. Gant.....       | Indiana   | Blaine Sellers.....    | Indiana    |
| E. H. Gage.....       | Indiana   | J. G. Schneider.....   | Wisconsin  |
| J. H. George.....     | Indiana   | T. W. Scott.....       | Ohio       |
| H. C. Goodrich.....   | Indiana   | E. B. Tyler.....       | Indiana    |
| C. F. Gray.....       | Indiana   | C. W. Throop.....      | Michigan   |
| B. F. Gray.....       | Indiana   | F. E. Woods.....       | Indiana    |
| D. W. Gray.....       | Indiana   | Q. H. Woodruff.....    | Indiana    |
| W. M. Hall.....       | Indiana   | M. L. White.....       | Indiana    |
| J. E. Henderson.....  | Indiana   | F. Wright.....         | Minnesota  |
| W. H. Harp.....       | Illinois  | A. T. White.....       | Indiana    |
| D. S. Hontz.....      | Indiana   | F. Winchester.....     | Michigan   |
| W. Z. King.....       | Indiana   | Total, 55              |            |

### Ohio College of Dental Surgery.

The forty-sixth annual commencement of the Ohio College of Dental Surgery was held at the Odeon, Cincinnati, O., Wednesday, March 9, 1892, at 8 o'clock P. M.

The number of matriculates for the session was one hundred and fifty.

The address was delivered by Dr. W. O. Thompson, President of Miami University, and the Class Oration by Garrett A. Bilow, of New Carlisle, Ohio.

The degree of D.D.S. was conferred on the following persons by James Leslie, D.D.S., of the Board of Trustees:

| NAME.                          | RESIDENCE.    | NAME.                           | RESIDENCE    |
|--------------------------------|---------------|---------------------------------|--------------|
| John Ray Adair.....            | Kentucky      | George Love.....                | Ohio         |
| Alexander Scott Ager.....      | Ohio          | Will Marquart.....              | Ohio         |
| Anthony Lewis Amann.....       | Ohio          | William Harrison McAdow.....    | Ohio         |
| Charles D. Arthur.....         | Pennsylvania  | Sam. Hamp. McCleery.....        | Pennsylvania |
| Charles P. Balger.....         | Ohio          | Louis Eugene Menuez.....        | Ohio         |
| Isaac Pettit Bell.....         | Canada        | Charles Willett Mills.....      | Ohio         |
| Porter Adolphus Bereman.....   | Ohio          | George Campbell Minturn.....    | Ohio         |
| Charles Solomon Beyl.....      | Ohio          | Leon David Monks.....           | Pennsylvania |
| Garrett Allen Billow.....      | Ohio          | George Edward Moore.....        | Canada       |
| Will Gavit Bradford.....       | Ohio          | H. Sterling Moore.....          | Ohio         |
| Louis Arnold Broring.....      | Ohio          | Montie A. Morey.....            | Michigan     |
| Harry Lincoln Brown.....       | Illinois      | Edward Parker Nugent.....       | Kansas       |
| Fred. D. Burnham.....          | Ohio          | David Cochran Patterson.....    | Kentucky     |
| Julian Caswell Cavagna.....    | Ohio          | Edwin Auber Peebles.....        | Ohio         |
| Henry M. Chaney.....           | Ohio          | King Sansom Perry.....          | Pennsylvania |
| Geo. Amos Chapman.....         | Washington    | Robert Gale Pinney.....         | Missouri     |
| Ch. Campbell Cherryholmes..... | Nebraska      | Wilber Nathan Priddy.....       | Kansas       |
| Joseph Boran Cochran.....      | Kentucky      | William Alonzo Pride.....       | Ohio         |
| Charlie Alvie Cole.....        | Ohio          | Henry William Radcliff.....     | Wisconsin    |
| John Lorenzo Conn.....         | Kansas        | Frank Benjamin Rees.....        | Ohio         |
| Neclessen S. Cox.....          | Indiana       | Oliver Taylor Robertson.....    | Ohio         |
| Robert L. Criswell.....        | West Virginia | James Holton Robinson.....      | Canada       |
| Harrison James Custer.....     | Ohio          | Edwin Launder Ross.....         | Ohio         |
| Miss Hattie A. Dobell.....     | Indiana       | Daniel Ulrich Ruegsegger.....   | Ohio         |
| Elvin Parker Eddy.....         | Ohio          | Rudolph Schmid.....             | Switzerland  |
| William Baker Fahnestock.....  | Ohio          | Albert Edward Sexton.....       | Indiana      |
| Phillip Robert Feigle.....     | Kentucky      | Charles William Soddors.....    | Ohio         |
| Orlando Moses Flinn.....       | Indiana       | Talmon H. Speece.....           | Ohio         |
| Edward Bradley Greenlee.....   | Ohio          | Henry Marion Smith.....         | Minnesota    |
| Alex. Hall.....                | Canada        | Charles Willard St. Clair.....  | Ohio         |
| Ernest Rush Hall.....          | Ohio          | James Berry Stewart.....        | Ohio         |
| Frank P. Hamilton.....         | Ohio          | William Harold Tenney.....      | Ohio         |
| Clement Vernon Hargitt.....    | Ohio          | Clyde Everett Townley.....      | Pennsylvania |
| Herman Haupt.....              | Germany       | Joseph Armstred Turner.....     | Ohio         |
| Homer Thomas Hawkins.....      | Ohio          | Rees L. H. Turner.....          | Missouri     |
| Lonzo Carl Hill.....           | Ohio          | Francis Marion Van Buskirk..... | Ohio         |
| Horace Anson Holmes.....       | Michigan      | Horatio Frank Vandervort.....   | Ohio         |
| Curtin Joseph Howe.....        | Pennsylvania  | Thomas Corwin White.....        | Ohio         |
| Harold Lorenz Jensen.....      | Louisiana     | John C. Wilde, Jr.....          | Michigan     |
| Archie Hubert Johnson.....     | Missouri      | William Elmore Wilkinson.....   | Ohio         |
| David Saylor Johnson.....      | Pennsylvania  | Ellsworth Williams.....         | Indiana      |
| Allen John Kimm.....           | Indiana       | Franz Ellias Willison.....      | Michigan     |
| Augustus Fayette Knapp.....    | New York      | Mrs. Mellie C. Winslow.....     | Indiana      |
| Henry Charles Le Beau.....     | Ohio          | Sherman Tecumseh Yapple.....    | Ohio         |
| Robbins Foster Lilly.....      | Ohio          | Total, 89                       |              |

## New York College of Dental Surgery.

The twenty-sixth annual commencement of the New York College of Dentistry was held in Chickering Hall, New York City, on Thursday evening, March 10, 1892.

The number of matriculates for the session was two hundred and seventy-three.

The Valedictory was delivered by Henry P. King, D.D.S., of the graduating class, and the Address to the graduates by Wm. H. McElroy, Esq.

The degree of D.D.S. was conferred on the following persons by Wm. T. La Roche, D.D.S., Vice-President of the Board of Trustees :

NAME.  
 John Patrick Burke.  
 Miska Lipot Braun.  
 Edward Santley Butler.  
 Walter Benney.  
 Frederick Brueckner.  
 George Francis Barrett.  
 Eugene Bonilla Y Cuibas.  
 James Edward Byrne.  
 Henry Emile Bischof.  
 John Francis Buckley.  
 Carl Rudolph Otto Bickel.  
 Albert William Crosby.  
 John Phillip Cromwell.  
 Edward Archibald Crostic.  
 George Edward Christie.  
 Martin Lawrence Collins.  
 Nelson Millard Chitterling.  
 Louis Bristol Daboll.  
 Harry Clay Derby.  
 Richard Francis Doran.  
 Anthony Chas. Durschang.  
 Joseph Fuld.  
 H. Clay Richardson Ferris.  
 Finn Fosheim.  
 Edgar Ozias Goodell.  
 John Francis Goger.  
 Walter Harris Gardner.  
 William Henry Garrett.  
 Dexter Glennon Gordon.  
 Charles Frank Guntner.  
 Charles Casselman Gibson.  
 Joseph Gluck.  
 Joseph Harvitt.  
 John Henry Hughes.  
 Wm. Henry Moore Hamlett.  
 Peter James Heffern.  
 Otto George Hoffman.  
 Orion Perseus Howe.  
 Henry Dryer Hatch.  
 Byron Edward Joubert.  
 George Washington Koles.  
 Eli Koles.  
 Harry Taylor Kelsay.  
 Isaac Kroch.

NAME.  
 Henry Palmer King.  
 Henry Albert Kregeloh.  
 Ernest August Kolling.  
 Frank Belknap Long.  
 Frank Leroy Lockwood.  
 Alfred Tennyson Lockwood.  
 W. Hawthorne McCutcheon.  
 Miguil Romon Mangual.  
 Frank Lester Munsell.  
 Augustus MacCollom, Jr.  
 Julius Adolph Mayer.  
 Alonzo Silas Mead.  
 Edward William McNeil.  
 Frederick Thos. Murlless, Jr.  
 Henry Alfred Neech.  
 Frederick Smith Parsons.  
 Henry Amon Parmentier.  
 George Elbert Reynolds.  
 George Alphonse Roussel.  
 Samuel Schnaper.  
 Frank Schroeder.  
 Aug. Vancortlandt Stebbins.  
 Henry Josiah Staepoole.  
 Jacob Schnaier.  
 E. Warren Sylla.  
 Henry Gustav Schroeder.  
 Edward John Moritz Seebold.  
 Engelbert Stoetzer.  
 Mario Tolosa Y Polidura.  
 Ezra Oakley Taylor.  
 Zebulon Scriven Taylor.  
 George Vande Verg.  
 Orwill Van Wickle.  
 George Putnam Willis.  
 Edwin Chapin Wallace.  
 Henry Lamont Wheeler.  
 Frank Jackson Woodworth.  
 Augustine Joseph Walsh.  
 Edgar Williams.  
 Willie Jackson Ward.  
 Leon Jabez Weeks.  
 Harry Fones Whitter.  
 Floyd Marcus Zelig.  
 Total, 87

### Vanderbilt University—Dental Department.

The thirteenth annual commencement exercises of the Dental Department of the Vanderbilt University were held at the Vendome Theatre, Nashville, Tenn., February 24, 1892.

The number of matriculates for the session was one hundred and twenty-six.

The Class Oration was delivered by C. J. Washington, D.D.S., of Tenn., and the Faculty address by Dr. C. S. Stockton, of New Jersey.

The degree of D.D.S. was conferred by L. C. Garland, the Chancellor, on the following persons :

| NAME.                 | RESIDENCE   | NAME.                   | RESIDENCE      |
|-----------------------|-------------|-------------------------|----------------|
| V. W. Alexander ..... | New York    | C. C. Evans .....       | Illinois       |
| C. R. Adams .....     | Mississippi | C. Eshleman .....       | Iowa           |
| C. S. Allred .....    | Alabama     | T. A. Fayette .....     | Alabama        |
| J. M. Ashburn .....   | Tennessee   | F. B. Gaither .....     | North Carolina |
| G. M. Brown .....     | Michigan    | C. B. Graham .....      | South Carolina |
| L. Bland .....        | Louisiana   | W. I. Hale .....        | Alabama        |
| A. E. Brown .....     | Texas       | W. L. Hansbro .....     | Tennessee      |
| F. Bartell .....      | Illinois    | A. C. Jones .....       | Tennessee      |
| J. A. Beavers .....   | Alabama     | R. A. Jones, Jr. ....   | Alabama        |
| J. R. Beach .....     | Tennessee   | W. I. Johnson .....     | Alabama        |
| J. S. Brown .....     | Mississippi | E. L. Kendrick .....    | Alabama        |
| F. K. Barefield ..... | Mississippi | B. E. Kidd .....        | Alabama        |
| J. P. Corley .....    | Alabama     | O. G. Mingledorff ..... | South Carolina |
| R. Z. Chapman .....   | Alabama     | T. W. McKell .....      | Mississippi    |
| R. H. Carratle .....  | Iowa        | M. B. McCrary .....     | Tennessee      |
| J. J. Cook .....      | Michigan    | J. M. Murphree .....    | Alabama        |
| D. P. Cook .....      | Kentucky    | C. W. Mathison .....    | Alabama        |
| S. C. Cawthorn .....  | Florida     | J. M. Millen .....      | Tennessee      |
| W. J. Dillard .....   | Texas       | G. Minnick .....        | Illinois       |
| J. S. Dalton .....    | Missouri    | A. J. Newcomer .....    | Illinois       |
| S. K. Davidson .....  | Kentucky    | J. B. Penny .....       | Missouri       |
| E. H. Dennison .....  | Connecticut | J. H. Palm .....        | Germany        |
| W. H. Powell .....    | Louisiana   | F. O. H. Thiele .....   | Germany        |
| A. L. Pedigo .....    | Texas       | C. J. Washington .....  | Tennessee      |
| M. D. Steele .....    | Louisiana   | V. B. Warrenfells ..... | Virginia       |
| C. A. Sevier .....    | Tennessee   | J. D. Wise .....        | Alabama        |
| R. Sanderson .....    | Alabama     | F. P. Ward .....        | Alabama        |
| F. W. Simons .....    | Texas       | W. L. Weatherby .....   | Mississippi    |
| W. K. Slater .....    | Tennessee   | N. F. Weatherby .....   | Mississippi    |
| C. C. Sims .....      | Arkansas    | H. W. Walker .....      | Georgia        |
| N. W. Sherman .....   | Tennessee   | V. H. Ward .....        | Mississippi    |
| M. O. Sallee .....    | Kentucky    | V. A. Williams .....    | California     |
| H. E. Spencer .....   | Mississippi | H. Wiggins .....        | Texas          |
| W. S. Taylor .....    | Kentucky    | A. Walker .....         | Georgia        |
| R. E. Thornton .....  | Georgia     | C. M. Walton .....      | Tennessee      |

Total, 70

### American College of Dental Surgery.

The sixth annual commencement exercises of the American College of Dental Surgery were held at Hooley's Theatre, Chicago, Ills., on Wednesday, March 9, 1892, at 2 P. M.

The valedictory address was delivered by H. E. Myers, D.D.S.

The degree of D.D.S. was conferred on the following members of the graduating class :

| NAME           | NAME                 |
|----------------|----------------------|
| W C Brown      | E A Eritis           |
| F F Brown      | R M Grimes           |
| A J Bacon      | A L Gilmer           |
| W T Corwith    | V C Garratt          |
| C M Cody       | W S Graves           |
| C I Chase      | W S Harter           |
| George Collins | R V Hurdle           |
| C L Crossman   | E C Hoffman          |
| A E Crum       | O C Hall             |
| I B Carolus    | Caroline L Hartt     |
| L M Darling    | J Hetu               |
| P E Douglass   | C S Irwin            |
| C L Davis      | Jennie Loretto Kelly |
| H W Davenport  | H P Loomis           |

| NAME                |
|---------------------|
| C L H Lennmalm      |
| W H Lillibridge     |
| J A Messenger       |
| H E Myers           |
| Geo W Mills         |
| W N McCay           |
| M G E Marshall      |
| C S Marshall        |
| W T Morris          |
| A S Marshall        |
| W A Nelson          |
| J M Oaks            |
| I J Pierce          |
| Edgar Palmer        |
| Josephine D Pfeifer |
| W E Pilcher         |
| S T Rice            |
| Fanny M Rowley      |
| F C Ross            |

| NAME                |
|---------------------|
| Adelaide F Rix      |
| W T Rogers          |
| W E Sturmberg       |
| B R Simons          |
| A E St John         |
| W R Smith           |
| A O Stutenroth      |
| H F. Stempel        |
| C F Smith           |
| Lucy M Scott        |
| George Steele       |
| Florence E Thompson |
| C C Trowbridge      |
| L A Tidball         |
| H H Von Lackum      |
| S A Wilson          |
| I C Ward            |
| H J Wallin          |
| V S Wisner          |

Total, 66

### Homœopathic Hospital College—Dental Department

The first annual commencement of the Dental Department of the Homœopathic Hospital College, of Cleveland, O., was held in connection with that of the other departments in the College Building on March 22, 1892.

The number of matriculates for the session was fifteen.

The degree of D.D.S. was conferred on the following graduates :

| NAME            |
|-----------------|
| P. W. Murton    |
| C. L. Kelsey    |
| C. S. Geer, M.D |

| NAME             |
|------------------|
| J. M. Clyne, M.D |
| G. E. Bishop     |
| W. E. Root       |

Total, 6.

Doctor of Medicine—Honorary—was conferred upon S. B. Dewey, J. E. Robinson, H. Barnes and L. P. Bethel.

THE number of men working on the Exposition buildings is now more than six thousand. On some of the buildings work is proceeding day and night.

PRINCE GEORGE of Wales, who, if he lives, will some day be king of England, will visit the Exposition, a cablegram from London announces.

### Northwestern University—Dental Department.

The commencement exercises of the Dental Department of the Northwestern University were held in connection with those of the Medical Department in Central Music Hall, Chicago, Ill., on Tuesday, April 26, 1892.

The number of matriculates for the session was fifty-six.

The faculty address was delivered by Prof. J. H. Hollister, A.M., M.D.

The degree of D.D.S. was conferred on the following graduates by Henry Wade Rodgers, LL.D., president of the University :

| NAME                   |
|------------------------|
| Charles Martin Baldwin |
| James Lewis Blish      |
| William Leonard Barnes |
| Joseph Free Baird      |
| Edwin Morgan Chapman   |
| Lewis Samuel Celley    |
| Adam William Feltmann  |
| John Lloyd Foster      |
| William Alfred Grove   |

| NAME                     |
|--------------------------|
| Alvah Bradmon Graham     |
| William Fielding Garnett |
| George Byron Hiller      |
| William Edward Merritt   |
| Augustus Gorman Miller   |
| Samuel Thomas Mitchell   |
| Clifford Murry Roberts   |
| George Everett Warren    |
| Doctor Merritt Wilcox    |

Total, 18.

A FEW years ago the Dental Section was formed in the American Medical Association, and because many practicing dentists were graduates of dental colleges and not of recognized medical schools, it was necessary that they should have their own autonomy. This has worked very satisfactorily and the Dental Section has been a great power for good in encouraging dentists to complete their professional education by taking the regular degree of doctor of medicine as well as that of dentistry, so that they may come into closer harmony with the medical profession as recognized specialty practitioners.

DR. H. P. C. WILSON, of Baltimore, says that of the thousand patients who have come to him suffering from the opium habit nearly all have been led into it by the attending physician. He thinks no diseased condition, except advanced and rapidly fatal cancer, justifies the habitual use of opium for the relief of pain.—*American Lancet*.

## NOTICE OF DENTAL MEETINGS.

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### **Dental Society of the State of New York.**

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The Dental Society of the State of New York will hold its twenty-fourth annual meeting at Albany, Wednesday and Thursday, May 11th and 12th, 1892.

Papers will be read by the following distinguished members of our profession: Edwin T. Darby, D.D.S., Philadelphia, Pa.; Eugene S. Talbot, D.D.S., Chicago, Ill.; C. F. W. Bodecker, D.D.S., New York City, N. Y.; Albert Carter Westlake, D.D.S., Elizabeth, New Jersey; and discussed by prominent dentists from all parts of the United States. In order that the discussions may be interesting, all those who have been invited to open discussions, will be allowed fifteen minutes—others ten.

Nothing will be left undone to promote the interests of practical and scientific dentistry. No clinics! No exhibits!

C. S. BUTLER, Secretary.

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### **Florida State Dental Association.**

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The annual meeting of this body will be held in Jacksonville, on the 10th day of May, 1892. The State Board of Dental Examiners meet at the same time and place, and also the State Committee of the World's Columbian Dental Congress. This will be an important and interesting occasion for the profession of Florida, and for such other members of the profession as can make it convenient to be present; there will be a large display of instruments, appliances and material. Railroads will make special rates. Hotel rates have been made for \$2.00 per day for all attending the Society.

A cordial invitation is extended to all to be present.

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### **Dental Meeting.**

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The American Dental Society of Europe will hold its eighteenth annual meeting at Basle, Switzerland, August 1st, 2nd and 3rd.

Members of the profession are cordially invited to attend. Clinics will be a special feature of this meeting. The University will place desirable rooms at the disposal of the Society, and an ingenious amphitheater for accommodating in the immediate vicinity of the patient a larger number of spectators than are able to witness operations under the ordinary circumstances, will be loaned by the Swiss Dental Association. Programmes may be had on application to the President, Dr. Bryan, of Basle, or to  
CHAS. W. JENKINS, Sec'y, Dresden.

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### Illinois State Dental Society.

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The twenty-eighth annual meeting of the Illinois State Dental Society will be held at Springfield, Ill., May 10-13, 1892. The State Board of Dental Examiners meet at the same time and place. The profession generally is cordially invited.

LOUIS OTTOFY, Secretary,  
70 Dearborn St., Chicago.

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### American Medical Association—Section Dental Surgery.

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The following named gentlemen have accepted the invitation to read papers before the Dental Section of the American Medical Association, to be held at Detroit, in June, viz.: Dr. G. S. Junkerman, Cincinnati, O.; Dr. T. D. Crothers, Hartford Conn.; Dr. J. Smith Dodge, New York City; Dr. W. C. Barrett, Buffalo, N. Y.; Dr. Briggs, Boston, Mass.; Dr. Whitefield, Evanston, Ills.; Dr. J. L. Gish, Jackson, Mich.; Dr. J. S. Marshall, Chicago, Ills.; Dr. M. H. Fletcher, Cincinnati, O.; Dr. H. Gadle, Chicago, Ills.; Dr. G. W. Weld, New York City; Dr. G. L. Curtis, New York City and Dr. E. S. Talbot, Chicago, Ills. Still other papers are to come for that occasion; it is expected that this will be one of the largest meetings of this section ever held.

## EDITORIAL.

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The Ohio Dental Law—Amended.

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As will be seen by reference to another page of this number of the REGISTER, the law regulating the practice of Dentistry in Ohio has been amended by the recent Legislature.

By the amendments and changes made, the law is brought up to the present time so that it embodies the leading features of the laws enacted in other States, viz :

The registration of all practitioners in the State, this registration is to be made with the Board of Examiners, and there only.

The examination of all who begin the practice in Ohio since July 4, 1889, except those who hold a diploma from a reputable Dental College or a license under the former law.

A Board of Examiners, consisting of five persons, is provided for, which is to be appointed by the Governor ; rules and regulations are given for the performance of the duties of this Board. Provision is made for the prompt and efficient execution of the law, and a penalty that will be efficient in all cases of conviction. False assumption of a name or title, whereby the public may be deceived, is a misdemeanor, subjecting the violator to the penalties prescribed.

The law took effect immediately upon its passage, which was April 7, 1892.

It is to be hoped that every reputable dentist in the State will give the law his hearty support. If any are found ignorantly violating it, it is the duty of those more highly favored to see to it that such persons are promptly informed as to the requirements of the law ; and those who knowingly transgress should be made to realize that it is not a good thing to violate a wholesome law. Those who promptly, willingly and cheerfully comply with beneficial law cannot afford to permit others about them to ignore requirements that are for the public and professional well-being.

## A Remarkable Man.

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We enjoyed the privilege a short time ago of a brief visit with Dr. J. A. Robinson, of Jackson, Mich. (familiarily known as Uncle Jerry). We found him in excellent health, and with the spirits and buoyancy of a young man of twenty, though he is now within a few days of eighty years of age, and at work at the chair apparently as much interested in what he was doing as a beginner making his first fillings. Some fillings were shown, in the mouth of a patient, made by him within the last three years, which seemed as perfect and secure as any fillings could be.

He is probably the oldest practitioner in Michigan, having been in practice about fifty-four years. He studied dentistry in Boston, worked there for several years, afterward came to Cleveland, Ohio, where, in connection with his brother, he conducted a very successful practice for a number of years; then removed to the city of his present home, where he has for thirty years been in continuous practice and manifests an unusual interest in all that pertains to dentistry. A few years ago he devised a remedy, which bears his name, for the treatment of certain phases of diseased gums, which perhaps has no superior as a remedy for the affections to which he applies, and for which he recommends it; it is a heroic but very efficient remedy, as will be readily understood when its constituents are recognized, which are carbolic acid and caustic potash, properly combined and prepared.

Though Dr. Robinson has been and is greatly interested in all that pertains to his profession, he has always been interested in and given attention to many outside things. He is by no means a man of one idea. He has been nearly all his life actively engaged in Christian work, and that in various directions, in Church, in Sunday-school, and in all that pertains to public morals and well-being. He has been much interested in political matters, though he never held nor sought a political office. He has been a voluminous writer upon subjects of political and public interest; though his writings were by no means confined to politics, he has written on scientific subjects, moral, religious, social and professional questions. His productions have been published in

newspapers, periodicals and the various journals of the day; these he has carefully collected and arranged, and they constitute a large volume. Though at the age of eighty, he is writing nearly as much and as well, perhaps better, than ever before. It is generally presumed that soon after sixty-five or seventy years of age men begin to lose interest, energy and ability in all the affairs of life; Dr. Robinson seems to be an exception to this idea. His life has been one of correct habits and freedom from many things that injure if not destroy, in so great a number of instances.

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### The Isaac Knapp Dental Coterie.

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A few days ago we had the opportunity of learning, by observation, what a live city dental society is for the profession in its midst and in the vicinity.

It was my privilege to be present for one evening at a meeting of the *Isaac Knapp Dental Coterie*, of Ft. Wayne, Ind. This Society was organized some four or five years ago in memory of Dr. Isaac Knapp, the pioneer of true dental practice in that city; one who did more for the elevation of Dental Science and art in Northeastern Indiana than any other man up to the time of his death, and he left an influence and impress that will never pass away; and may this Society ever regard it as one of its most sacred duties to cherish and perpetuate his memory. His professional life was an inspiration to all who knew him and to all who may know of him, so far as they can appreciate his worth.

This Society is doing much to uphold and sustain the honor and character of the profession, as is shown by the appreciation entertained by the public of that city and vicinity for honorable dental service and those who render it.

The Society have it in contemplation and are considering the subject of establishing a Dental Infirmary, not for the purpose of teaching but purely as a matter of benevolence, for those whose circumstances will not permit them to have the service of the dentist in the regular way. This, when established, will

prove a boon to the poor, and a great relief to the busy and over-worked dentist. We will be pleased to refer to this matter more in detail when it is in full operation. Ft. Wayne is a model western city, it has a copious supply of the purest water we have ever seen in any city; it has an ample supply of natural gas, and the atmosphere is as clear and pure as crystal, and with these and the accompaniments who could not be happy.

Long may the *Isaac Knapp Dental Coterie* live, prosper, and stand as a model that others may imitate.

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### Obituary—Dr. John Allen.

Died at his home in Plainville, N. J., March 8, 1892, Dr. John Allen, D.D.S. the oldest practicing dentist in New York City.

The Doctor's death was occasioned by physical exhaustion.

A brief biographical sketch may here be made.

He was born in Broom County, New York, November 4, 1810. He was a descendant of the Ethan Allen family of Vermont, whose history is identified with the Revolutionary War. His father, Dr. N. Allen, moved to Ohio when John was but a boy. Here agriculture engrossed the attention of the family for several years. At the age of nineteen this son became a student of Dr. James Harris, a medical man of high standing, who relinquished the practice of medicine for that of dental surgery. After having concluded his course of pupilage with Dr. Harris he began his professional career in Cincinnati, in 1830; here in the early part of his practice, with time on his hands, he availed himself of the advantages of the Ohio Medical College, of Cincinnati, for acquiring a more thorough foundation for the practice of this specialty. Being the only dentist in the college it was agreed by the students of the class that when subjects were obtained for dissection he should have the teeth for experiment and use in his practice—not only human teeth but those of cows and other animals were also obtained and utilized in the preparation of substitutes for the natural teeth. Dentures were also carved from the teeth of the hippopotamus and used for the purpose, porcelain teeth not having as yet been brought into use. Soon after this, however, these were made and generally used. Dr. Allen sought and obtained a practical knowledge of their manufacture. Single and block teeth, when well mounted upon

gold plates, were considered the highest style of artificial dentistry that had then been obtained. There were, however, still, defects that he sought to overcome; and although he had reached the maximum in this style of work, he sought to attain more perfect results by which he might avoid fissures, the stiff mechanical appearance, and in many instances, a failure to restore the proper form and expression of the mouth and face. To meet this apparent demand for some mode by which more perfect results could be obtained, Dr. Allen resolved to commence various experiments with a view of working out a new system, which he had conceived, which was yet vague and chaotic—a mere germ. But the method of developing the system led through a dark way, along an untrodden path, with little or no antecedent light. He persevered, however, and his efforts were crowned with success. He did succeed in restoring lost parts in such a manner as to bring back the original features of the face in a very marked degree; he succeeded not only in doing this but in producing the most perfect dentures that had ever been devised, especially in reference to the absolute closure of all interstices, the complete arrangement of teeth to correspond with the features of the face to secure good enunciation, and the accomplishment of thorough mastication. His success was fully recognized by the dental profession in both this and European countries. Dr. Allen's improvements were taken up and adopted in practice by many of the leading dentists in this country, and subsequently in other countries. The well-constructed dentures of continuous gum work are acknowledged upon all hands to be much superior to any other style of dentures. This much is here said because the perfecting of this work was the great achievement of Dr. Allen's life, and his name will be associated with it so long as artificial dentures are needed and constructed.

Notwithstanding Dr. Allen's time and efforts were so largely bestowed in the particular line of work here indicated, he had time and effort for the general welfare of his chosen profession. He was always interested in educational matters—himself at one time being a college professor. He was during all the active years of his life connected with and took part in association work. He was a good writer, and contributed to the literature of the profession. He was a man beloved by all who knew him, and highly appreciated and respected by all who knew of him, and it may truthfully be said of him he was a high type of a Christian gentleman.

A more extended sketch of Dr. Allen was published in the April No. of Vol. 28 of the DENTAL REGISTER.

# THE DENTAL REGISTER.

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## COMMUNICATIONS.

### **Synopsis of a Lecture on Syphilis Before the Classes in the Dental College of the University of Michigan.**

BY C. G. DARLING, M. D.

Clinical Lecturer on Oral Pathology and Surgery in the College of Dental  
Surgery.

Thousands of volumes have been written on the subject of syphilis, enough, it would seem, to leave us without a doubt concerning its origin, course and treatment.

It has been no small task to select from the mass of literature available the few points about syphilis which are essential to you, that you may understand its course and nature, as you will find it in your practice. We must, first of all, put away the idea that syphilis is essentially and only a venereal disease, and remember the fact, that the innocent may suffer from it as well as the guilty.

Syphilis, says a recent author, interests everybody; in the first place, those who have it, a very appreciative audience, and then those who are not affected by it, that is to say those who run the risk of acquiring it. This disease may be said to precede all written history, and strange it may appear that the record has been left upon the teeth of human beings who lived and died ages ago.

The imprints of hereditary syphilis upon the teeth are so lasting and characteristic that the original appearance may be preserved and read after centuries have elapsed. Those who have taken the trouble to study prehistoric bones say that the history of syphilis is written in every country upon the earth.

In 1887 there were, in the Musee Boca, four skulls bearing undoubted marks of syphilis. All of the skulls are of undoubted antiquity. Suffice it to say, that these relics teach us that syphilis existed in Peru before America was discovered, and the disease was common in that country, for many children's skulls bear evidence of it. Research shows that it was no uncommon disease among the North American Indians before the discovery of America by Columbus, though it is improbable that it was carried to Europe from this country, as some would have us believe, for at one time it was known in European countries as the "American Evil."

When you have been engaged in your work of caring for the teeth, have you ever thought there might be written upon them such pages of history?

Parrot says: "these proofs are superior in certainty to those derived from written documents, and from them we learn that syphilis is probably the most ancient disease of man." Opponents of this theory say that other lesions of the bones and teeth exist than those of syphilis, and that the disease may have undergone many changes since the early period from which we think we can read it. Its written history, which dates back many centuries, shows no change unless it be such modifications as we can show in individual cases by well-directed treatment.

The earliest writings of the Chinese contain a fair history of the disease, which, if true, would indicate that the disease was known in that country two thousand years ago.

Egypt claims the distinction of possessing a fair amount of the disease fourteen centuries B. C.; while Japan has a record written in the ninth century.

The Bible is said to abound with many vague references to the disease, although no true or full description is given. Whatever may have been its history in ancient times does not concern us, but it suddenly came into prominence as an epidemic in 1492, when it was spoken of in France as the "Malady of Naples," because the French soldiers were supposed to have brought it from that place when they returned from one of their invasions. In a few years it was found to exist in all countries of Europe,

pervading every rank of society. Its source was not recognized at first, but was attributed to the evil influence of the stars; all writers of the time joined in saying they had never seen anything like it.

During the centuries which followed, all venereal diseases were classed together without distinction, and it was not until 1852 that they were strictly classified, and syphilis received the proper consideration which it demands as a disease.

#### WHAT IS SYPHILIS?

Syphilis is an infectious, constitutional disease, probably due to a micro-organism, which enters the system by the blood and lymphatics, pursuing a chronic course.

It attacks, primarily, the connective tissue, but no tissue in the body is exempt from its ravages, and no organ is so strong that it may not be invaded by this disease.

It is not necessarily a venereal disease; all that is required to infect the healthy individual is to place some of the blood, discharge, or secretions containing the virus upon an abraded surface, or a surface capable of absorption, and the work is done.

The conclusions that syphilis depends on a micro-organism for its transmission have not been positively proven, though in the year 1884 Lustgarten found a bacillus in an initial lesion and in a gumma. He described them as "slightly-curved rods in the interior of nucleated cells." While the disease is usually contracted by persons holding improper relations, there is no person who does not at some time run the risk of accidental infection. The point where the virus is planted develops in time certain peculiar phenomena. This point bears the name of initial lesion, because it is the first marked indication that the bearer has been infected. The secretion from the initial lesion is highly contagious, and is the most common source from which the virus is derived; though secretions from secondary lesions, the blood and lymph, during the secondary stage, are also contagious, while the tears, milk, sweat and saliva are not contagious unless mixed with the blood or some of the secretions.

The infection is usually direct, commonly by cohabitation, while mouth-to-mouth infection, the result of kissing, is more frequent than would be supposed.

Newmann published a carefully prepared report of cases, where the primary lesion was in other locations than on the genital organs. Eighty-four were reported, of which forty-six were on the lips, some were on the tonsils, others were on the tongue and in the pharynx.

Taylor, in a recent article, mentions two cases occurring in the practice of physicians who contracted it in examination of a body soon after death.

Another found chancres on the scalp conveyed by using a copper comb which was borrowed from a syphilitic friend.

Brousse saw a case where there were seven chancres on the face; these were doubtless caused by using a razor which had recently been used upon a syphilitic individual.

Primary sores on the lips or within the mouth may be caused by transferring the disease by cigars where the maker, a syphilitic, has moistened them with saliva that he may nicely turn the end; it may also be conveyed by pipes which are passed from mouth to mouth, tooth-brushes, chewing-gum, whistles, drinking vessels that are in common use, razors, towels, by operations and instruments. Glass-blowers, by using the same pipe in common, occasionally become infected. It matters not the source of infection, whether from primary or secondary lesions, or where the primary lesion may be located, the course and duration are essentially the same.

Dr. Bulkley has recently reported some interesting cases of the unusual ways in which syphilis may be contracted. Out of fifteen hundred cases seen by him, sixty-five had the primary lesion at other points than on the genitals. Thirty-four of these were males and thirty-one were females. In thirty cases the chancre was on the lips, in seven on the fingers (the dentist will please recall this when he is examining the mouth of his many patients), six on the breast, six on the tonsil, five on the tongue, three on the cheek, two on the chin, one on the ear, one on the forearm and one on the hand. He further states that forty per cent. of his female patients had innocently contracted the disease. He found one case where the disease was contracted by wearing a bathing-suit which retained the virus from the person who had previously worn it.

Bedding, canes, toilet articles, and even opera-glasses have been known to convey the disease. Another, where the chancre was on the tongue, contracted the disease by holding pins in her mouth. The patient was engaged in a business (fitting garments) where a number of pins were used, and formed the uncleanly habit of putting them in her mouth.

Physicians and dentists may convey it from one person to another by the caustic holder, or by instruments where they are not properly disinfected. Biting and tooth wounds may convey the disease. The largest chancre ever seen was on the ear of a man who had been bitten in a fight. Pinching and scratching may also be added to the ways of infection. The nursing of infants where the breast has a syphilitic lesion becomes a source of infection to the child also. A mother nursed two children, her own and a foundling, giving to each a breast, in due time the foundling died from a well-defined hereditary syphilis; she then gave her child both breasts; in time the parent and child both developed syphilis. Numerous are the instances where physicians and dentists have contracted the disease while attending to their professional duties. One case is mentioned of a lady who contracted the disease while dressing the eye of a friend who had syphilis. Rubbing the eyes, picking the nose, or carrying soiled fingers to the lips, may be sufficient to produce chancre and all of its followers. Physicians or dentists may contract it while examining the mouth and throat of syphilitic patients; the patient coughs, projecting some of the virus upon the face, it may fall upon the lip or eye and begin its lasting course.

In Russia a "female pretender" infected a large number of persons by removing foreign bodies from the eye by the tip of the tongue; on the tip of her tongue was a well-developed chancre.

Thus we find everywhere unseen danger, the only wonder we can express is that infection is not more common. You must be ever on the alert, not only to save your patients from infection, but to save yourself, your family and future generations..

The course of syphilis, for the convenience of study, may be divided into three stages: the primary, secondary and tertiary, each period being characterized by well-marked symptoms;

though the change from one to the other is so gradual that it can hardly be said that one period has ended and another begun, the stages not being sharply defined. The first stage has two well-defined periods: the period of incubation—from the time of infection to the appearance of the chancre; the second period extends from the appearance of the primary lesion, or chancre, to the development of the constitutional conditions. The lesions occurring in the primary stage are, the initial lesion and induration of the lymphatic glands. The secondary stage is one of constitutional manifestation, and is frequently ushered in with fever. During this stage there will be various lesions of the skin and mucous membrane, the eyes and lymphatics, particularly the latter, will be involved, superficial ulcers will appear in the mouth and on the tonsil, though the patient is scarcely aware that his throat is sore. The duration of this period will depend much upon the habits and life of the patient and the thoroughness with which he carries on the properly-directed treatment. The tertiary stage may be entirely avoided or never develop if the patient carefully conducts his life and follows the improved methods of treatment during the early stages. When allowed to pursue its course the disease may develop gummata, and ulcerative lesions, destructive disease of the bones and various affections of the nervous system.

The period of incubation is variable. According to the statistics of Diday, it may vary from twenty-five days to one hundred and twenty-five days, the average period being forty-five days. It never occurs later than six months, rarely it happens that a case is reported with a period of incubation lasting ninety days. During this period no sign or symptom betrays the presence of the disease, but soon a change takes place at the point where the virus penetrated, and only at that point. The tissues at this point pass through a series of changes and in time return to their natural condition.

The point is called the initial lesion and for a time is the only expression of the disease. The first lesion of syphilis is called chancre, sometimes called primary syphilitic ulcer, initial sclerosis or Hunterian chancre.

Whether infection be derived from chancre or a secondary lesion, the primary lesion is always the same and may appear upon any part of the body that is exposed to the virus.

There are four recognized forms or appearances which the initial lesion may present: First, erosion; second, the silvery spot; third, the dry papule; fourth, follicular chancre.

Du Castel states that he twice saw the development of chancre. In one case it appeared as a small red spot, which after several hours turned into a papule. The second became a papule ten hours after its first appearance. The small red spot begins as an erosion, the epithelium is raised and a serous secretion takes place beneath it. Sometimes the epithelium is raised and secretion takes place without a redness. The lesion increases slowly, presenting the appearance known as the "silvery spot," so typical of this form of chancre. This secretion disappears, and when it passes away rapidly, either by exposure or absorption, the surface left may be flat or convex, of a brown or brownish-red color; this forms the dry papule. The follicular variety is not so common as the other forms, is pinkish and elevated; as it increases in size it becomes red in color; it does not require a long time for the lesion to develop into a superficial erosion. The epithelium is destroyed, the floor slightly eroded, while the walls slope gradually, not being very clearly cut; it is usually round or oval, but may assume any shape; it may vary greatly in size from a line to a full inch in diameter when well hardened and fully developed. The secretion at first is serous until the sore is irritated or infected with pus microbes, then suppuration begins. Induration is a very important element in the development of chancre, and begins usually in the first week, not later than two or three weeks; this begins first in the mucous membrane surrounding the sore, and gradually extends to the cellular tissue beneath.

The induration is slight at first, but continues to increase until the chancre begins to heal, when it gradually disappears. The change is probably due to the formation of granulation tissue, though the inflammation is never acute, and is gradually removed by absorption.

Chancres on mucous surfaces rarely leave a scar, while those

on the skin remain for years, a shining mark with pigmented edges. Much of the scar depends on suppuration and the destruction of tissue.

The neighboring lymphatic glands become indurated, but the skin covering them does not change color. These glands do not become united, are hard, movable and painless. They rarely suppurate unless they are injured. Only one gland may be affected, or a chain of glands may become indurated; they gradually resume their normal condition after the disappearance of the chancre. When chancre is on the lip or chin, the submaxillary lymphatic is enlarged. When chancre is on the tongue, search for enlargement of the subhyoid glands. Chancre on the eyelid is accompanied by enlargement of the peri auricular glands. Chancre on the finger or forearm by enlargement of the epitrochlear glands, the axillary glands will also show some enlargement; these glands will be enlarged when the chancre is on the breast. Chancre is usually solitary, but more than one may appear if more than one point is inoculated at the same time. When chancre appears on the lip, it is usually considered a trifling lesion; it may first appear as a small crack but gradually grows, becomes raised, and may be crusted over by the dried secretions; there is lack of pain, but after ten or fifteen days the swelling of the submaxillary glands adds weight to the diagnosis.

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### Blackening of the Teeth by Antipyrine.

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It is asserted that the internal use of antipyrine blackens the teeth; this peculiarity should be generally known by the profession, and also among the laity, that objections may be made on this ground to taking it as a remedy. The blackening is the more intense, the more imperfect the enamel, but may be removed by attrition with dilute acid. The considerable use of antipyrine for several years back, gives importance to this latter observation.—*Southern Dental Journal*.

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## VALEDICTORY ADDRESS.

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DELIVERED BY

J. J. R. PATRICK, D.D.S., AT THE

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**Tenth Annual Commencement of the Dental Department,  
State University of Iowa, Thursday Evening,  
March 10th, 1892.**

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Impressed by the splendor which surrounds me, and by the sight of this large audience, I feel impelled to render homage to the beauty and intelligence which have prepared so brilliant a reception for the graduating class of the Dental Department of Iowa's University. If all the other branches of learning in the University have been as well cared for as the Dental Department, the Board of Regents, the Presiding Officer, and the Professors have reason to congratulate themselves.

The diffusion of knowledge has ever been considered one of the most important elements of the greatness of nations; all educational institutions are conducted in the interest and for the ultimate benefit of the public; but a State University is one that appeals more directly to the general interest, inasmuch as the influence of a University reaches far beyond the boundaries of State lines, and every graduate who goes out into the world is a qualified instructor in his every-day intercourse with his fellow-man, in some department of useful knowledge. It is not more than fifty years ago that this beautiful and fertile State of Iowa was the abode of savages and wild animals; large herds of buffalo, elk and deer roamed at will over the vast prairies, while more savage animals lurked in the boundless forests. About this time a stream of civilization commenced to flow from the older States which rolled down from the summits of the Alleghany Mountains and overspread the banks of the Ohio, the Mississippi, the Arkansas, and their tributary streams. This ceaseless flood of human beings continued to flow from the abodes of civiliza-

tion, spreading out over an extent of nearly 1,200 miles in length and at an average advance of settlement and cultivation of seventeen miles a year. They did not come as the Tartar hordes, like a desolating fire or a raging torrent to oppress and overwhelm the opulent regions of the earth, but to assert their destined superiority over those of nature, to "replenish the earth and to subdue it." These early pioneers brought with them their own domestic animals, their agricultural and other implements, their seed grain, their powder and their rifles. They settled where they took up their abode, never to return. This tide of American population, streaming westward, was the wonder of the world, overspreading the wide fallow of the prairie till mile by mile the shore of the great ocean of human industry was lifted nearer and nearer to the distant sunset. But a time came at last when the wonder ceased. A fierce storm fell upon the central waters, the wave at the western margin no longer rippled further up the beach, but was sucked back, as it were, in sympathy with the distant tumult. The tide had turned and the current poured in dark and unwonted channels, a new emigration commenced—another goal was opened for the country's surplus life. The wagon, whose white canvass glittered like a sail, on many an occidental highway, was changed to an ambulance, or was laden with the stores of a quarter-master, the beast of burden labored as before, the farmer and his boy were still upon the march but it was the gun and the bayonet, and not the axe, that glittered above their shoulders and they rushed to fields where the harvest was red and not golden, where the reaper was death, and in the furrows of the field they won, many of those militant husbandmen found their last rest. The graves in the vast cemeteries of the nation are not altogether ghastly; a sacred pride goes hand in hand with grief to visit them, and glory and sorrow will ever sit at the tomb of those who prove that it is sweet to die for one's country. At the close of the war nearly 2,000,000 disciplined men returned to their homes and former avocations, or sought new ones. New cities came into existence and old ones increased in population. Locomotion, illumination, and the transmission of intelligence; in fact, every industry or

occupation in life sprang forward and moved with accelerated speed. The discipline necessary to hold together such large bodies of men during the rebellion proved to be one of the principal factors in the country's material progress. It was a school of instruction on a stupendous scale, the influence of which will reach to future generations. Verily "there's a divinity that shapes our ends, rough-hew them how we will." A further explanation of so rapid a progress is to be found in the constantly increasing division and subdivision of labor, building up the social fabric in the same manner that special cells compose and build up each part of a living organism; and it is a wise provision in nature that each division and subdivision of labor, each segmentation in the cellular formation of living organisms, is dependent on the others and is the outgrowth of natural laws. If we review the history of the sciences, we will find that marked advance has been made in a given science only when it has been connected with the progress of some collateral science or art. Thus the astronomer when connected with the optical instrument maker, became capable of rapid progress. The triumphs of magnetism and electricity, when the machinist and theorist were brought together, were rendered possible. To show how much we are indebted to the refinements of chemical analysis for our knowledge of the elementary constitution of bodies, and the great power it has given to man in his struggle towards civilization, would take volumes to recount. Two instances will suffice: The chemical combination of nitre, sulphur, and charcoal, known as gunpowder, and the reduction of iron from its ores. What changes they have wrought in the destiny of man! The bow and arrow would never have been effective in driving the wild animals from the prairies and out of the forests. The Saxon and his rifle made it possible for men to become skillful agriculturalists on a larger scale than was ever known before. No savage lives in harmony with the laws of nature. On the contrary, it is his ignorance of these laws that makes him a savage. And it is only in proportion as a man understands his surroundings--understands the laws that govern his existence and uses them to his advantage, and in that proportion only does he

become civilized. The superiority of the civilized over the savage is in proportion to the extent to which his thought can grasp the past and the future. By his knowledge of letters he is enabled to record events which otherwise would escape his memory, and thus he augments his experience and frees himself from the inaccuracies of tradition. He realizes that it is not altogether what he sees, but how he sees. The senses, he has learned, are merely the substructure for the superstructure of thought. In uncultivated minds, the senses are the leaders. In cultivated minds, they are led by the understanding. A weak but disciplined eye can see more accurately than a strong, but undisciplined one. It discovers truth from many sides—is never thrown out of focus by chimeras, but receives the impress of objects truthfully; or, if the eye is defective by nature or enfeebled by age, the understanding corrects the error and restores the enfeebled eye to usefulness. When error is known truth is discovered. Follow your senses and they will lead you into a ditch; understand and cultivate them, and they will guide you in the paths of truth. I have been led to these reflections from having been a resident of the Territory of Iowa before it became a State, when the channels of industry were few and when a surplus of production was without a market. Journeys to any considerable distance could only be accomplished by the water highways. To leave Keokuk by boat, descend the Mississippi to the mouth of the Ohio, ascend the Ohio to Pittsburgh, then by the old stage to Philadelphia over the mountain roads were an affair of such moment as seldom to be undertaken twice. Months scarcely sufficed to perform the journey; it was like a pilgrimage to Palestine in the Middle Ages. Now the distance is traversed in thirty hours. Among the great luxuries of the present age, the facilities for traveling are perhaps the most important, for they not only bring remote regions of the earth into proximity, but actually in a sense, bridge over the great gulf of time.

Ladies and Gentlemen of the Graduating Class: "The Dental Faculty of the University of the State of Iowa has assigned to me the duty to bid you on their behalf, an affectionate farewell.

The relation of pupil and teacher must now cease. The ties which have been formed amid the labors of the lecture room and made dear by years of pleasing associations, must now be broken. You have received, as evidence to the world, of your competency to practice your chosen profession, and as the reward of your industry, the degree of Doctor of Dental Surgery, and all the privileges pertaining to that degree. And you are now about to leave the walls of your *Alma Mater* to go out into the great world and engage in the practical duties of your profession. The occasion demands that I should present a few reflections for your consideration.

The honor conferred upon you this evening must receive additional value in your estimation, when you reflect that it has not been conferred upon you by an institute owned and conducted by a Joint Stock Company. On the contrary, it is your privilege, to have become the Alumni of the Dental Department of a great State University, formed by legislative enactment to carry out all the requirements relating to education; endowed by the State and General Government with vested rights, that it may endure forever.

You have now arrived at that period of your life when collegiate discipline has ceased to control your actions. Your researches in professional knowledge will no longer be subject to the direction of preceptors. You will go out into the world to mingle in the great contests of society, in honorable competition. Each will play his part and be the architect of his own fortune.

It is often the case, unfortunately, when students are released from the restrictions of college rules and have closed the period of their University exercises and taken their stations in life, that they relax their energies and become indifferent to scientific pursuits. Nothing can be more injurious to the best interests of society, or to your own spiritual health; nothing could be more disrespectful to your instructors and the good name of the institution that has vouched for your proficiency. In the bosom of every truly professional lady and gentleman there is an intense yearning for the acquisition of scientific knowledge, and if he or she has not this love abiding in the heart, they owe it to themselves, to the

profession and to society, to abandon a profession they so unworthily esteem. The profession you have embraced and the honors you have earned and that have been conferred on you, this evening, have been conferred with the expectation that you will, from this time on, until life shall close, or until you shall relinquish it for some other vocation, devote your whole time and energy to the alleviation of human suffering, and thus, by the "relief of man's estate" earn for yourselves the title of benefactors of mankind. In order that you may become accomplished in your profession it will be necessary for you to devote your whole time and energy to it, irrespective of every disturbing temptation, for you should understand that your attendance on the prescribed course of lectures together with the ordinary pupilage in the laboratory, dissecting and clinic rooms, are not sufficient to make you accomplished dentists—all that can be taught or expected from a medical or dental school consists in a knowledge of those great general principles which are contained in the different departments of medical and dental science, and which are to be investigated and elaborated by yourself. What you have learned is all that can be taught—the foundation of your professional knowledge, upon which you are to rear the superstructure by constant study and clinical observation. A knowledge of your profession is of the first importance. But it is not all. You must practice what you know and practice in such a manner that it will be a blessing to the community in which you reside, while a source of emolument to yourself. A practice, however, must first be obtained, and the only way to obtain the patronage of a community is to merit it. It is unnecessary for me to give in detail, the means by which you might secure a lucrative practice, by accommodating yourselves to the humors and idiosyncracies of a community in which you may cast your lot. Be careful, however, how you "stoop to conquer." It is a dangerous experiment at best, for what one individual would esteem politeness, another would denounce as obsequiousness. Your professional popularity will depend upon your personal popularity as well as upon your abilities; and your firmness of purpose and kindly feeling under the most trying circumstances in the discharge of your professional duties will secure both. As the

smallest number of mankind are rich, and the largest may be divided into those in moderate circumstances, and those who are poor, and as all are subject to disease or accident, it follows that a doctor's fees are governed by these conditions. Discrimination in fees is therefore constant and necessary, whereas discrimination in merchandising, if indulged in to any extent, would be ruinous. A doctor's first care is the good of his patients, regardless of fees. A merchant's first care is his cash book. A doctor is no more legally bound to give his services for nothing than a merchant is to give his merchandise, but public opinion—stronger than statute law—says a doctor who can help a poor man and will not, without a fee, has less humanity than a poor ruffian who robs and maims a rich man to supply necessities. Public opinion says with truth it is something monstrous to contemplate a man of liberal education tearing out the bowels of a poor family, by taking for the services of one hour what would keep them in food for one week. This is why public opinion calls medicine, with all its specialties, a liberal profession. As you wish the respect of mankind, I charge you not to make a trade of your profession.

I can do no better than to commend to you the advice of Polonius to his son, Laertes, at parting :

\* \* \* \* \* Give thy thoughts no tongue  
 Nor any unproportioned thought his act.  
 Be thou familiar, but by no means vulgar.  
 The friends thou hast and their adoption tried  
 Grapple them to thy soul with hoops of steel ;  
 But do not dull thy palm with entertainment  
 Of each new hatched, unfledged comrade. Beware  
 Of entrance to a quarrel, but being in,  
 Bear it that the opposer may beware of thee.  
 Give every man thine ear, but few thy voice ;  
 Take each man's censure, but reserve thy judgment.  
 Costly thy habit as thy purse can buy,  
 But not expressed in fancy ; rich, not gaudy ;  
 For the apparel oft proclaims the man ;  
 And they in France of the best rank and station  
 Are of a most select and generous chief in that.  
 Neither a borrower nor a lender be ;  
 For loan oft loses both itself and friend ;  
 And borrowing dulls the edge of husbandry.  
 This above all—to thine ownself be true ;  
 And it must follow as the night the day.  
 Thou canst not then be false to any man."

Your intercourse with your professional brethren must be conducted upon the strictest principles of medical etiquette. Do you ask where you will find a complete code of Medical Ethics? I answer, in your own bosom, for there are none so ignorant as to be unacquainted with justice and injustice. There is but one code of ethics as there is but one geometry; a slight study of either compels us to draw the same conclusion. "That which you would that men should do unto you, do ye also unto them likewise," for that is all. Graduates! In behalf of the Dental Faculty of the University of the State of Iowa, I bid you an affectionate farewell.

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### **Tumors of the Mouth.**

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BY J. TAFF, D. D. S.

Read before the 7th District Dental Society of Ohio, May 17, 1892.

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The mouth is a part of the human organism that is subject to a variety of diseased conditions, all of which are likely to come under the observation of the dentist. These affections may be of the most simple variety of inflammation, accompanied by supuration and mild forms of ulceration, but they are oftentimes found in more serious or violent forms.

Tumors of great variety are likely to occur in the mouth, perhaps, the more simple form of these is that usually denominated "epulis," which term simply means, upon or springing from the gums. These more frequently are simply benign growths varying in consistence from merely a fungoid form to that which may be very firm and resistant. They sometimes consist of simply one large lobe or mass; in others they are lobulated, consisting of two or more miniature lobes, either but little, and in some cases, very markedly fissured. They are sometimes of very rapid growth, and in others quite slow; months, even years, sometimes being required for any considerable development; in other instances they spring into considerable prominence within a few weeks time. They usually start from the margins of the

gums, between two or more teeth, sometimes enveloping the free margin along two or more teeth. Their structure varies very greatly, sometimes it consists simply of a fungoid mass, very freely ramified by blood vessels, and still very poorly organized. In others to be less vascular more dense, of a myeloid character with little or no apparent organization. In the growths of medium, or less rapid formation, they are oftentimes found of fibrous character throughout, a good degree of organization being effected. These are more dense and resistant than those already mentioned. These tumors are well nigh, if not altogether, cartilagenous, having a very small amount of blood supply. None of these tumors cause persistent pain, and very seldom any appreciable soreness.

The attachment of the more vascular varieties will usually be by a small base, sometimes, often little more than a thread-like attachment, through which an artery and vein pass. Others will have larger attachments or broader base, and extend deeper into the structure, and be more likely to involve the surrounding and deeper structures; in such the diameter of the attachment may be larger than the tumor; elsewhere this variety of tumors may grow to a large size, and not in any serious extent involve the adjacent tissues. It is very seldom indeed that this simple form of tumors become attached to the bony tissues; such occurrence would only be likely to take place where the growth was of long standing and persistent development,

The circulation through these tumors is oftentimes so nearly normal as to cause but little, if any, change in the color of the mucous membrane enveloping them. In all cases, however, where there is greatly increased vascularity, there will be heightening of color, and sometimes a purple hue is presented; this depending upon the sluggish character of the circulation. In a well nourished and vigorous constitution, these growths will be less rapid and less likely to encroach upon structures much beneath the surface. In studying and dealing with these growths, it should not be forgotten that in favorable circumstances with a low grade of vitality and a strumous cachexia that a more or less malignant character may be assumed; they, like many

other things, will proliferate and grow in a favorable soil. The lower the tone of the system, the less perfect the nutrition, and especially if there is present some special vitiation, the greater is the liability to such growths.

It is not always an easy matter to determine the origin or cause; in some cases there is no difficulty in this respect, in others the origin is very obscure. They are sometimes found upon the gum beneath which there is an accumulation of salivary calculus, in others an accumulation of other offensive material. I do not remember to have ever seen a case of epulis occurring because of pyorrhœa alveolaris, but they do occur upon diseased gums, induced by roots of teeth, oftentimes the merest remnant will be sufficient to do this. In nearly all cases where these tumors exist upon the gum in connection with sound teeth, there will be somewhat of separation of the gum from the neck of the tooth, but usually little or no suppuration.

#### TREATMENT OF THESE TUMORS.

Proceeding with special interference to treatment of these tumors, the true character in every case should be thoroughly understood. If of the more simple forms with small or comparatively small basal attachment, a prompt removal may be made with the scissors or knife, seizing the growth with a pair of toothed forceps make a clean cut from the bottom, remove the whole in one mass, there will always be some hemorrhage; in the more vascular varieties, this may seem in some instances to be almost alarming; blood will spurt with considerable force from the vessels, in some cases, exhibiting an arterial pulsation, in other cases, though flowing very freely, will be continuous or without the intermittent character. This, however, is usually easily arrested by the use of proper hæmostatics and with compression. If the base is larger, and the tumor seemingly very vascular, a very effective and perhaps less objectional way to remove it is by ligation, which results simply in strangulation; when sloughing will ensue and the tumor be removed. The principal objection to this method of procedure, however, is that all the tissue involved will not be so certainly removed as would be in the use of the knife or scis-

sors; but with the ligature, there is very little liability of hemorrhage, unless there is a hemorrhagic tendency. Such a predisposition should always be ascertained before proceeding with even the most trivial operation of this sort.

These tumors having the large attachment give the greater difficulty in their removal, and special care should be exercised in such cases, for they are more likely to involve the tissues more deeply.

Another method of treatment of certain forms of these growths, is by injection of some preparation that will either coagulate the contents of the tumor, and so interfere with the circulation, that its support and growth cannot be longer maintained, or by some material that will destroy the nutrient property of the plasm in the growth. Whenever in these structures the nutrient supply is cut off or markedly interfered with, there will not only be an arrest of the growth, but nature at once sets up a process for eradication. A solution of carbolic acid and iodine, the strength of which should be determined by the recognized conditions present, may be used in many cases with very good results. A solution of creosote and tannic acid has been employed by some, but it perhaps possesses no advantage over the preparation first mentioned. Electrolysis may be employed in some cases, with prompt and successful results. In large vascular tumors of this variety, with sluggish circulation and increased color, this method may be employed with very decided benefit; this process is accomplished by the use of the ordinary battery, connected with the electrolytic needles; these passed into the tumor, but not brought in contact, and the current being made to pass through from three to eight minutes. This exercises a destructive influence upon the nutrient material, and the mass will slough away.

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A DOCTOR in Bootle, England, has the following printed on his prescription blanks: Gratefulness of the patient is part of his disease, is most prominent when the fever is highest, lessens during convalescence, and disappears as health is re-established. Hence, prescriptions only for cash.—*Memphis Medical Monthly.*

## Management of Practice.

BY DR. W. H. WHITSLAR.

(Read before Cleveland Dental Society, May 2, 1892.)

The practice of dental surgery means—the treatment of diseases of the dental tissues and adjacent parts, also, includes the making and adjusting of artificial substitutes when such parts are lost.

This means much. Our professional duties have become so enlarged within the last decade, by various improvements that have been learned, that the extent of dental practice seems almost unlimited.

Duty commands us to work, and labor has solved many niceties of practice that render mankind ever thankful for the age in which he lives, and yet, principles of thousands of years ago remain the same as ever requiring only the genius of the nineteenth century to evolve.

Americans may well pride themselves upon the fact of their leading the world in advancement of dental science. Necessity of this advancement was recognized, and too, environments have assisted in this wealth of progress. This led our European friends to a charming race, and in full view of the fact that they lead precedence by reason of age and many trials, our spirited American wears the crown of victory. In manifestation of this, students crowd our dental colleges from every quarter of the globe, giving intimation that the seat of learning is in American schools. Compatible with this invasion of students, our investigators and inventors are unceasingly increasing our knowledge because of the obligations resting upon them.

The statement that the dentist operates upon living tissues of human beings, is *prima facie* evidence of a stupendous obligation. Many times the life of a patient is weighed in the balance, and a mite of ignorance may sever the life-line. The laws of the community should be indicative of a Nation's regard for the lives of its subjects, and finally, the people themselves should figure for a happy and lengthy stay upon earth, rather than one

of torture from poor service and horrible treatment by the hands of licentious quacks.

The first natural emolument then necessary to a successful management of a dental practice is *education*. Many dentists seem to have a fine practice; their offices are crowded with the elite, they live and flourish well, their personal wants are gratified in every way; they have plenty of money. This shows a good business management which may be that and that only. Or, if combined with this, recognized ability may take equal or more than equal share; how often are we led to ask "does Dr. Blank give competent service for value received?"

Some good operators are ruined by having too many patients. Overcrowding naturally leads to hasty operations with neglect of important and necessary conditions to be fulfilled, and ere long, complaints are made that Dr. Blank is not successful in the art of saving teeth. It is far better to have a limited number of patients and successfully manage these, than to spread ruination among many.

The value of teeth is inestimable, and their preservation by competent masters of this art, a grand science. Who would not be a master of what he professes? Yet there are shysters in every hamlet denuding his good name of every vestige of manliness, by proposing to curtail the expenses of those that seek his service. Conscience is not a part of his education, and a credulous populace are deceived, ruined, and the educated dentist suffers by an unjust comparison. So I must argue that to have successful management one must have education, which should begin as early in life as when duties for right and against wrong are conceived. You may then lead the individual through the various schools of secular and moral learning, and his mind may be enhanced by collegiate courses in literary and scientific schools. Love of art and music may be put into practical use in training for the practice of dentistry. Manual training is of paramount importance as a supplement to an educated mind. In fact there is such a correlation of accessions to one's education, that it is plainly evident that a broad understanding will give one prestige over the the contracted mind of the uneducated dentist.

It is true that we often see a good dentist who has not had school advantages, experience has been his teacher, purchased with the price of many years. Energy has been his main support. The same energy, in use with brains to direct affairs, will always produce the best dentist. There are other items in the conduct of practice to be considered. Let us imagine our student graduated from a reputable college. He locates in a desirable community where he expects to live and become a good citizen. His office is his first consideration. It must be centrally located and of easy access. His rooms should be commodious and convenient for his work; good windows are among the first considerations. These may face any direction, except the direct west. Economy may be found in good carpets and furniture. Elegant furniture should have a place in your home rather than the office, and so should your high priced paintings be placed for your wife and family to enjoy; the office is for business and not for a parlor. Parlors are nowadays used by quacks as offices to make up in appearances what they lack in virtue. The office should be pleasant of course, but it is better to give it the appearance of a professional one. This may be done without an exhibition of skulls and teeth, or specimens that will excite morbid curiosity. Instruments and appliances best suited for your purpose are the greatest consideration in opening an office. Spend more money for these than you do in fixing up your office is wholesome advice. For a dental operating chair and other necessities that will last many years, it is cheaper to get the best at the very start, and leave the minor appurtenances come in due time, as they certainly must with less trouble. There are many other things that might be said in regard to office equipment. When ready for business hang out your sign; don't plaster the walls with your placard. A sign of simple construction in a desirable place is sufficient. Patients will hear of you and now your work begins.

The practice of what has been learned at college requires prudence, also much moral courage. Care of your eyes and physical welfare is part of the stock you carry. Drunkenness will not be tolerated. Tobacco is an abomination. These and a thousand other things are required of us, and the most of them are not hard

to carry out unless already in the toils of vices. Cheerfulness should be your demeanor when you invite the patient to be seated in your operating chair. Avoid coarse stories or any indication of not being a gentleman, but some pleasantry may serve to make the patient feel at ease. Any frivolity will lessen your chances of scientific success. Intimacy breeds contempt. Observe the private rights of the patient thoroughly. It is perfectly proper to let the patient know or see you wash your hands before touching his mouth, and it is a satisfaction to have a clean napkin, or towel, placed over the chest and shoulders, also one upon the head rest. These are slight observations of the management preparatory to an operation. Upon the capability, skill or artifice of the operator to detract from painful operations, his success is often dependent. No two persons are alike, and it may be that with one patient he may not succeed well, whilst in the hands of another dentist, the operations prove successful. Happy expedients are necessary very often to master control of the patient. My method, quite often, when a patient insists she is very nervous, is to humor her out of that belief. Each patient is a study, and how to manage the various idiosyncrasies, is indeed quite a large part of the control of practice. Out of the office the dentist should observe proper demeanor, such as become a professional man.

Whatever is worth doing at all is worth doing well, and so we believe that deviations, which are far from our calling, such as politics and any partisan movements, will not aid practice. Studies correlated to the science of dentistry are great aids as well as pastimes.

In conclusion, (leaving much to be said by those who will discuss this subject), there remains one item that dentists invariably almost neglect, and that is collection of fees. Dentists are poor collectors. We often hear it said that it is easier to do the work than collect the fee. Upon this part of practice I am weak myself, and don't practice what I preach; but it is certainly correct to send statements of accounts immediately after service is rendered. If dentists everywhere would practice this, we would revolutionize the ideas of your patients, and greater respect for our calling would accrue in the end.

## Various Kinds of Dentition.

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BY N. E. ROOT, D.D.S., CLEVELAND, OHIO.

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Teeth are peculiar to the vertebrate animals and are attached to parts of the mouth, commonly to the jaws. They present many varieties as to number, size, form, structure, position and mode of attachment; but are principally adapted for seizing, tearing, dividing or grinding the food. In some species, teeth serve as weapons of offence and defence, and as aids in locomotion, transportation and procuring of food. They are characteristic of age and sex, and in man, subservient to beauty and speech. Teeth, may be found in fish, reptiles, snakes and mammals generally. The teeth of fish show greater variety than those of any other class of animals, they range in number from zero to countless quantities. In form, they are generally conicle, slender, sharp, pointed and very numerous. In the shark, the teeth are supported by the upper and lower jaws, as in most quadrupeds, but many other fish have teeth growing from the roof of the mouth, from the surface of the tongue, and even from the bones of the nose and base of skull. The mode of attachment is varied, being fibrous and elastic hinge, or by anchylosis or implantation. In all fish, teeth are shed and renewed, not only once as in mammals, but frequently during the whole course of their lives. In the class of reptiles called chelonians, as the tortoise and turtle, they are devoid of teeth.

No species of toads possess teeth, but frogs have teeth in the upper jaw. In the lizard, and most serpents, teeth may be found in both jaws and also upon the palate. In most lizards, teeth are anchylosed to each jaw; and in crocodiles they are implanted in sockets.

In mammals, as in fish and reptiles, there are to be found species that are devoid of teeth. The ant-eaters being an example of this type. Whales have whale-bone substitutes in the upper jaw. The elephant has never more than one entire molar, or parts of two, in use on each side of the upper and lower jaws, to which

are added two tusks in the upper jaw. The common number of teeth in rodents is twenty. Whilst hares and rabbits have twenty-eight each. Thirty-two teeth characterizes man, and is the average number of this class of mammals, although the typical number is forty-four. The maximum number of this class is one hundred and ninety, which are found in the true dolphins. the common porpoise has between eighty and ninety, and the armadillo ninety-eight. Where teeth are in excessive number they are small and of a simple conicle form, while in most other mammals, the teeth have special forms for special uses, as is well known in those of man. It is peculiar to the class of mammals to have teeth implanted in sockets, and confined to the maxillary bones, and form a single row in each; they may be present however in only one, but are generally found in both bones.

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### Contentment.

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Dedicated to my Friends who have seen Eighty Years.

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Not old nor lame, nor halt nor blind,  
But well preserved in frame and mind;  
My hearing is a little tough,  
Perhaps I've really heard enough.

My home is pleasant, clean and neat,  
The inmates lovely, kind and sweet;  
With comforts rare my table's spread,  
My sleep is sound, and soft my bed.

Of this world's goods no more I crave,  
If they will last me to the grave.  
The great beyond will soon be here,  
The path is peaceful, vision clear.

You ask me why I do not sigh?  
It is because we never die.  
This world's a link in endless chain,  
We decompose to live again:

Where we our olden friends will meet,  
When the gestation is complete.  
You ask me how that fact I know?  
My reason says it must be so:

For God who made the world and plan,  
And made it for the home of man,  
Did not make man for gain or pelf,  
But in the image of himself.

With heart and soul with love to burn,  
And love his Maker in return.  
He could not leave the work undone,  
And so he sent a perfect Son

To show how it would take effect,  
And in the end would resurrect.  
So Christ appeared at early dawn ;  
Both Marys saw him in the morn.

The angel rolled the stone away  
Just at the dawning of the day ;  
A symbol of the rising sun  
That the new life was now begun.

His angel robes shone as the light,  
His face shone with effulgence bright;  
He told the Marys " not to fear "  
" For Christ has risen—is not here."

The Marys then believed the word  
That they should see the risen Lord.  
At Emmaus he appeared again  
And talked with his two chosen men.

He left the two men in the street,  
And met eleven who sat at meat ;  
They did not recognize his face  
Nor know him 'till he said the grace.

Through all the Gospels and the Acts  
Of the Apostles are these facts.  
In ancient history of Rome  
We learn that various acts were done ;

We may not get the truth exact  
But still have record of the fact.  
Macaulay's England tells of fact  
That may not always be exact.

Plutarch's history of lives and men  
Show they were great and not in vain ;  
The record of the very fact  
Perhaps is not the most exact,

But still we have the distant view  
And we believe the record true.  
The evidence is very small  
Compared with what is told by Paul.

Damascus was the chosen place  
Where Saul would meet Christ face to face,  
An enemy intent to slay  
The Saviour on a certain day.

Christ met him with a shining light  
Before he had a chance to fight  
And said: " Why persecute thou me ? "  
The light was bright; Saul could not see,

But said : " Who is it that I hear ? "  
The answer came, Saul shook with fear,  
He knew the voice ; he could not see ;  
It said : " Why persecute thou me ? "

As if to make it still more plain,  
The Christ gave Saul his real name.  
This record written out by Saul  
After his name was changed to Paul

Is fact and no legend or fable,  
And told by a man amply able  
To give the facts he heard and saw,  
Without a blemish or a flaw.

This record, if it stood alone,  
Will stand a million years to come,  
As it has stood in all the past,  
And will not fail while time shall last.

The book has been revised again  
By scholars and by learned men.  
No one who reads the story through  
Can fail to see it must be true.

He who in life would lead the van  
Must always be an honest man ;  
He must be brave, he must be right  
To be a hero in the fight ;

Arkwright was hero of the spinner,  
And Paul the hero of the sinner ;  
He never let his labor cease,  
But followed Christ, the Prince of Peace ;

Watts gave the steam the world to free,  
And Franklin electricity.  
Lincoln was hero in freedom's cause,  
And Grant to execute the laws ;

All were a part of nature's plan  
To raise and elevate the man.  
The protoplasm that we know,  
The lowest form begun below,  
Is just as sacred in its place  
As man is to complete the race.

From center to circumference I think it must be true  
That life's reaction always has a higher life in view ;  
The granite rock, the mineral, was first to re-appear ;  
Next came vegetable life, and that not very near.

Through earthquakes and commotion, upheaval and turmoil,  
The granite rock was crushed and broke to make alluvial soil ;  
Next came vegetable life, the very lowest form,  
Warmed by the sun and wet with rain for moss to grow upon.

Thro' years of change and waiting long the higher grasses came,  
And then the reptiles, then the birds, the order is the same ;  
So all along these million years the higher order ran ;  
The onward march has never slept till it came up to man ;

And so I think you cannot fail to fully see and know  
That man retains some vital part of everything below.  
We find in man the mineral in tissue and in blood,  
Then vegetable comes along the very self-same road,

And then at last the animal, the lowest form of man,  
And that must be the order that our human life began.  
God's providence is over man and all the things we know,  
But man has also providence o'er little things below ;

Man's providence is over land, to plough and till the ground,  
To beautify God's providence and smaller things around,  
To make two spears of grass to grow where one had grown before,  
To build the cities and the schools, and help the needy poor,

To take the elements of earth and make them better still,  
To make himself and other things obedient to God's will.  
God's kingdom, if it comes at all, must come thro' human hands;  
We all must work together as we beautify the lands ;

Our duty and our privilege is to press along while here,  
And when the other life shall come we nothing need to fear.  
If it is true that man retains a portion of the past,  
The finished life will lead him to the heavenly life at last.

As birds look up with little eyes the mother birds to see,  
So we by constant looking up can see Infinity.  
Now, my old friends of four score years, say, how is it with you ?  
Have I shown you the great beyond, and made the picture true ?

Does the new world we're going to your hungry souls invite,  
And way across the valley dark do you behold the light ?  
If you do not, go meditate upon the heavenly day,  
Listen to hear the heavenly voice, and work and watch and pray.

JACKSON, MICH., May 31, 1892.

J. A. ROBINSON.

### **An Overdose of Gold.**

In December last a French soldier met with death by gold instead of lead. Having been accused of the theft of a sum of money, he followed the course, not unknown in the Orient, of secreting the stolen cash in his stomach. He swallowed the money and by so doing was acquitted by the judge because there was no tangible or exterior evidence of guilt. He was set free but disease presently arrested him ; he became the subject of an acute attack of indigestion due to the indigested gold. This attack subsequently resulted in death. An autopsy was performed and there was found in his stomach twenty-one gold coins of a value of eighty-five dollars to some former owner. The lethal dose of gold has not been recorded hitherto in the text-books on toxicology but it can in the future be stated that the quantity above mentioned "has been followed by a fatal result."

## PROCEEDINGS.

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### Seventh District Dental Society of Ohio.

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The annual meeting of this society was held on Tuesday, May 17th, at Washington Court House.

The society was called to order at 10:30 A. M., and continued till 4 o'clock in the afternoon. President A. O. Heise in the chair; Dr. J. R. Callahan, Secretary. There were about twenty-five members present. Pres. Heise read his address, which was a consideration of the legal status of the profession in Ohio, expressing gratification for the amendments made to the law by the last legislature, and expressing the hope that it would receive the sanction and support of the profession throughout the State. The subject was discussed by several of the members, each of whom expressed appreciation and approval of the law. After this a paper was read by Dr. L. E. Custer, of Dayton, Ohio, subject: "The Influence of Tobacco upon the Teeth of Tobacco Chewers." The opinion presented in the paper was, that the influence of tobacco upon the teeth is not as injurious as it is usually supposed to be, neither did the paper affirm that tobacco in any sense is beneficial to the teeth. Quite a spirited discussion was had upon the paper, several of the members taking part; some assuming the position that the antiseptic property of tobacco was beneficial in a degree; others maintaining that there was but little, if any, influence of this kind in connection with its use; others expressed the opinion that the exercise given to the teeth by the act of mastication strengthened them, especially in their periosteal attachment; others taking exception, saying that such a result was only occasionally found, that in many instances the teeth of tobacco chewers instead of being strengthened in their attachment were weakened and became loose by absorption of the tissues, and the teeth oftentimes lost in this way; it was the general opinion expressed that the teeth of tobacco chewers suffered by mechanical abrasion, more than the teeth of the non-users. In-

stances were mentioned in which the teeth were worn off to the margin of the gums by this kind of attrition. The habit was regarded by all as a filthy, disgusting and useless one; at least, the user of the weed found very little, if any sympathy in the consideration of that paper.

After the conclusion of this discussion a recess of one hour was taken.

The meeting convened again at one o'clock, when Dr. Custer closed the discussion upon his paper, which consisted chiefly in emphasizing the points presented.

The election of officers for the ensuing year was now declared to be in order, and a ballot being had, Dr. B. F. Johnson, of Camden, Butler Co., was chosen President; J. F. Dennis, of Washington C. H., Vice President; J. R. Callahan, of Cincinnati, Secretary; I. W. Keeley, of Oxford, Treasurer. The Executive Committee: Drs. J. H. Sillito, of Xenia; L. E. Custer, of Dayton, and Chas. Welch of Wilmington.

Camden, Butler County, was chosen as the place of the next annual meeting; and it was decided to continue the meeting two days. It was also decided to extend an invitation to the Eastern Indiana Dental Society to hold a joint meeting at the place above indicated, and at a time that would be acceptable to both parties. The Executive Committee was given discretionary power to extend the invitation, to make the arrangements, and fix the time for the meeting.

Dr. Callahan gave notice that next year he would make a motion to defer all business to the Board of Directors, in order that the greatest amount of time could be secured for the prosecution of practical and scientific work during the meetings of the Body.

A paper on "Tumors of the Mouth" was read by J. Taft, and discussed by Drs. C. M. Wright, A. O. Heise, Otto Arnold, W. D. Tremper, and J. Taft.

Though the paper brought under consideration only simple, benign tumors of the mouth, yet other varieties of tumors were considered, and many good thoughts and valuable suggestions made.

After some further unimportant routine business, this Society adjourned to meet as above indicated. The meeting was a very pleasant one indeed, and in a social way was enjoyable to all present. Several were present who are not often seen at our meetings. Another encouraging feature was that most of those present took part in the discussions and otherwise, and some who very seldom, if at all, have been elsewhere heard. If the entire territory of our State could be embraced at such gatherings, as was contemplated in arranging the States in Districts, very great advantage would accrue, and many would be brought out, and, as in this case, take part that otherwise would rarely, if ever, be seen in such meetings; and we hope that a warm interest will in the future be manifested for the success of this Society.

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### Northern Ohio Dental Association.

The Thirty-Third Annual Meeting of the Northern Ohio Dental Association was held in Cleveland, Ohio, May 10th, 11th and 12th, with an unusually large attendance of members and visitors. The programme as published in the *Register* was fully carried out, and all papers were read, with only one exception. Fourteen new members were added to the list of membership. The essays read at this meeting will appear in the *Register*. The next meeting will be held in Akron, May, 1893.

The list of officers for the following year is as follows:

President, W. H. Whitslar, Cleveland, O.; Vice President, S. B. Dewey, Cleveland, O.; Corresponding Secretary, Henry Barnes, Cleveland, O.; Recording Secretary, L. P. Bethel, Kent, O.; Treasurer, Charles Buffett, Cleveland, O. Executive Committee—Henry Barnes, J. R. Owens, (Cleveland,) F. Knowlton, (Akron), Grant Mitchell, (Canton). Membership Committee—Charles Buffett, (Cleveland), W. W. Fowler, (Painesville), S. W. Barker, (Toledo), C. Peck, (Sandusky).

A full and comprehensive programme will be announced soon for the next meeting. It has been made a rule of this society, that essayists shall send a copy of their essays to those who open the discussions, not less than thirty days previous to the meeting.

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## SELECTIONS.

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### On the Teaching of Anatomy to Advanced Medical Students.

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[Reprinted from the Medical News, December 26, 1891].

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The importance of anatomy to the physician and surgeon has caused the method of teaching this science to be largely determined by practitioners. The student is taught the elements of histology, the shapes and numbers of organs, the outlines of regions and their mutual relations. Other facts than those named belong in a very remote degree to the needs of practice; and when the great number of medical topics is considered, which is of necessity brought to the attention of the student, it is no wonder that governing bodies are disposed to disregard all phases of instruction that do not have direct claim upon the physician's time and service,

But science is rarely pursued for practical good. The acquisition of knowledge for its own sake—the determination of general principles that reveal the existence of law—awakens and maintains pleasures and interests in the mind of the anatomist compared with which the practical uses that he can make of the knowledge appear to be poor and mean. With as much propriety one might say that navigation is the highest use that can be made of the study of astronomy, as to assert that the chief end of the study of anatomy is to apply its tenets to medicine. These statements are made not to lessen the dignity and importance of practical work, but respectfully to claim that such work does not comprise all the value, indeed scarcely more than a small fraction of the value that pertains to the whole.

In his *New Atlantis*, Lord Bacon says: “We have three of our fellows that bend themselves, looking into the experiments of others, and cast about how to draw out of them things of use and practice for man's life and knowledge, as well for works as for plain demonstration of causes, means of natural divina-

tions, and the easy and clear discovery of the virtues and parts of the bodies. These we call dowry-men or benefactors. Lastly, we have three that raise the former discoveries by experiments into greater observations, axioms and aphorisms. These we call the interpreters of nature."

I hear a response to the foregoing statement that the structure of animals exhibited on a broad scale is already taught to classes in the scientific schools, and that in the scheme of a university education the biological subjects are as well advanced as any others in the curriculum. This is an imperfect, if not misleading, presentation of the facts. It is true that the rudiments of the structure and functions of animals and plants are taught. But to students already advanced by general training and by preliminary work in natural history, little is presented that prepares them to discuss the more intricate problems.

To my mind the scheme of university work is unsatisfactory until opportunity is afforded to men, who, after completing their biological and medical training, may desire to still further advance. Conceding that the question of maintenance has been settled, either by the possession of private means or by endowment of fellowships, what courses of instruction are afforded these advanced men? As a rule, nothing, or next to nothing. It is customary for such novitiates to reside abroad for several years, where amid numerous centers of learning are found one or more masters, the disciples of whom they become. The advantages of travel being considered, it may be said that with the comparatively easy means of obtaining the best instruction the present scheme is, on the whole, adequate. With such a conclusion I cannot agree. If it were true we might in reason have stopped long ago in our lines of university expansion. Independence in intellectual as well as in political life should be the object of American citizenship.

First, and always let us remember that medical investigators are those it is desired to train. It is for men that are already imbued with the desire to pursue their researches in anatomy that I appeal. They stand in this field with what preparations can be given them for usefulness. They are medical biologists—

medical anatomists. They are not restricted to the problem of the relief of suffering, and yet they are occupied with those other problems upon which the true solution of all depends.

For such instruction I would have a specially-designed museum and a specially-equipped laboratory. It may be assumed that in every great medical school, from among the large number of matriculates (men already trained and of the best quality), two or three of the type described will present themselves for an advanced course in anatomy. I am prepared for the objection that this is too large a number. But, so far as I know, no one has attempted to ascertain how many men in each class of graduates would come forward, and my impressions are based upon the number of workers in the general field of biology—some of whom, at least, would have pursued these, or similar studies, had any systematized course been presented to them. I will, therefore, begin with three men a year. To this number may be added as many young teachers, tutors, curators and prosectors who would avail themselves of the instruction. The work might be initiated in either of the halls of biology or of medicine. If the course were well established, it would be well to institute a laboratory and museum distinct from any on the university grounds.

I am of the opinion that the administrative success of such separation of collections would be assured. All must approve of the ethnological collection of Harvard being distinct from the Museum of Comparative Zoology, and of both in turn being set apart from the museum in the Medical School. In like manner I assume that there is no reason why series of specimens arranged in illustration of principles that are not taught either in the preliminary or in the proper medical courses should be necessarily connected with one or the other museum. The collections should be in the main designed to accommodate the preparations that are used in the illustration of general lectures. Museums that teach by the specimens being removed from the cases to the lecture halls are radically distinct from museums that teach by the conservation of series that are arranged and labeled for instruction as they stand, and which should be rarely, if ever, disturbed.

The following, treated in some detail, embrace the topics that occur to me at this time as appropriate subjects for instruction : The study of the human brain ; especially the study of the mammalian and avian brains, both of the gross and the minute anatomy, the localization of functions, etc. The study of muscular anomalies and their homologies in the normal myology of the vertebrates. The study of animal locomotion and its application to the morphology of the vertebrate limb, and in general the application of photographic methods in studying animal locomotion. \* Studies in craniology, especially the comparative studies of human and mammalian crania. The study of osteological variations, with a similar application to the normal anatomy of the lower animals and the beginning of morbid processes. The study of nutritive processes on tissue as correlated to age.†

In addition, courses of experimental morphology might be essayed. Such investigation could be encouraged without encroaching on the domain of physiology, as the votaries of this science somewhat arbitrarily restrict it. Indeed, much of the study of animal locomotion would be experimental, as would also be the study of protoplasm in viscid media, under rotation, compression, etc. The effects of light, temperature, water in motion and at rest, etc., on organization, would naturally find a place. Experiments on mutilation of embryos might also be undertaken.

Lectures on correlation of structure, on vegetative repetition,

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\* Instantaneous photographs have given us definite conceptions of the behavior of the manus and pes in terrestrial and aerial movements. I had the honor to point out as the result of a study of the negatives taken by Mr. E. Maybridge under the auspices of the University of Pennsylvania, that the ground is touched by the outer border of the foot and is left by the inner border, and that the impact represented by this transition is expressed by an oblique line that extends from without inward (ecto-entad) across the metapodium. Prof. H. F. Osborne, by studying the carpus and tarsus in extinct forms of mammalian life, has found that this conclusion is of value in studying the evolution of the parts. From this we can conclude that, as a result of a photographic plant in connection with advanced anatomical work, discoveries could with some confidence be anticipated.

† This would form a morphological study on the nature of age, and would more particularly embrace a consideration of the immature and senile forms as compared with the typically adult, as well as the retention of juvenile characters in the adult.

on the relation existing between phyllogenetic and teratological processes, could be given, as well as the study of the laws of heredity, especially in attempting to answer the question of the transmittal of acquired characters.

The teeth are so responsive to the constitutional peculiarities of the individual that their peculiarities can be seen and readily detected. The method of procuring accurate impressions can be applied, and the plans of preserving the form of teeth be easily accomplished.

As is known to the zoologist, the parts involved in the act of mastication are important in the classification of the mammalia, the slightest departure in the form, number, position, and rate of development of the teeth being, for the most part, correlated with other variations in the economy, while the shapes of the lower jaw and of those portions of the skull that afford surfaces for attachment of the masticatory muscles are of importance. No structures of the body resemble the teeth in the character of their response to morbid impressions; no other organs are arranged in progressive series, and none other than these are evolved after birth. Hence the effects of disease and accidents to which the teeth are subjected are sure to be recorded in the shapes of the crowns and roots.

If the student of heredity were to have placed at his disposal a collection of the casts of the permanent teeth of three generations—that is to say, of the parent of the subject, the subject himself, and the children of the subject—and if a clinical history were secured of the diseases and accidents that these persons had incurred, a tenable argument might be established as to the significance of the contrasts or resemblances in the forms of the teeth.

Thus, if three generations were expressed by the letters A, B, C, and if B is the subject of an acquired character (let us say from scarlet fever or measles), the new form of structure seen in the second and third molars may be transmitted to C. But in order to prove this it is necessary to know the peculiarities of these teeth in A. Hence, the teeth of the ancestors and descendants of the person who exhibits the acquired character must be

known. A somewhat similar plan of observation could be made on the teeth of the lower animals. It is strange that those teeth with endless pulps in which growth is rapid and interference with their relations causes permanent records to be made in malformation, should not have been used in studies of nutrition.

In connection with myological studies a number of minor problems suggest themselves; such, for example, is the nature of white and red muscles. It has been noted that in ostriches that have been confined in zoological gardens the muscles of the leg undergo fatty degeneration and become white in color; it is also known that the pectoral muscle in many of the gallinæ is white, presumably from the fact that they are used but for short and infrequent flights. How evident is the conclusion that a systematic study of all muscles of active birds living in enforced confinement, as compared with the relatively-active muscles in feral forms, might be undertaken with a fair prospect of throwing light upon the nature of the process, and with a hope that the subject of fatty degeneration (even if by this method not elucidated) may have its study placed on a broad basis by subjecting its tenets to the tests of systematized experiment and observation!

The morphological study of the results of diseased action might also be undertaken. The differences that obtain between normal individuals and those of the subjects of hereditary disease must be of importance to the anatomist and the pathologist.

The variations in the forms of the bones, as found in medical museums, are of a character that suggest their relation to inherited causes. Every clinical observer has noted the peculiar shape of the chest in families in which pulmonary phthisis is hereditary, even though the special tuberculous deposits are absent in some of its members. The clubbing of the finger-nails is a sign of the same disposition. Some writers, indeed, claim that in this class of subjects a special arrangement of the fibers of the pneumogastric nerve exists. Are these and similar morphological characters susceptible of being also gathered so as to contribute to the discussion of the transmission of acquired characters? Are not opportunities here presented for the medically-trained biologist to study the subject of heredity in a line so

important, and, alas ! with material so abundant ? Other hereditary diseases, such as struma, syphilis, and gout, are less strongly marked than is the tuberculous, but even on this obscure horizon landmarks are detected that are of sufficient definiteness to guide the observer to well-defined plans of study. The animals of zoological gardens exhibit examples of acquired struma, the effects of which more especially distinguish the skeleton. Can any of these characteristics be transmitted ? How would the skeleton of a tiger, let us say, born in captivity in the third and fourth generation differ from that of a feral type ? After what manner may one expect taxonomic characters modified in these generations of prisoners ?

The nature of malignant growths, it is not improbable, would find a solution in a line of research based upon a similar proposition. What proportions of malignant growths, such as the sarcomata, are met with in the feral state of quadrupeds as compared with those in the domesticated or the captive state ? Can experiments be devised by which we may expect to cause these growths to appear by creating the favoring conditions ? Can we study the genesis of the sarcomata to better advantage than has hitherto been done, by outlining the biography, the lineage, and to some extent possibly the destiny, of these tumors, by applying to them experimental methods of research ?

Medically-trained men are not apt to become pure morphologists. The underlying thought is of *function* through which *structure* is modified. In its best sense, therefore, Physiological Anatomy is the branch of science that would be most developed. Let us suppose that John Hunter had lived in 1891, and had essayed his work by all the aids of modern science, and had undertaken a plan of investigation for the continuation of his labors : might he not have accepted some such scheme as I have here feebly attempted to portray ? With the admiration we feel for his genius, let us not only have Hunterian orations, but in each medical center a Hunterian laboratory and a Hunterian museum.

"I am so utterly opposed to those cloud-builders who would divorce physiology from anatomy," says Haller, "that I am

persuaded that we know scarcely anything of physiology that is not learned through anatomy." (Quoted from R. Cresson Stiles' *Life and Doctrines of Haller*, New York, 1867.)

In Solomon's House in the *New Atlantis*, in which Bacon essayed a scheme for intellectual advancement, we read of "parks and enclosures of all sorts of beasts and birds, which we use not only for view or rareness, but likewise for dissection and trials, that thereby we may take light what may be wrought upon the body of man; we have also particular pools where we make trials upon fishes, as we have said before of beasts and birds."

I hear objections that this scheme is visionary and impracticable. How is the money to be obtained by which it can be rendered feasible? Where is the teaching-force to be recruited? My answer is that if the need of establishing such a course be acknowledged, the accomplishment of the end in view is no more difficult than in any other branch of pure science. A few years ago the establishment of seaside laboratories would have been thought chimerical. Now they are assured successes.

If I am told the results obtained will appeal to but few, I reply that important projects must be supported in proportion as they so appeal, until such time as they shall have proved their right to exist.

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### Pain and Inflammation of Dental Origin.

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Dr. Hugenschmidt (*La Semaine Medicale*) admirably sums up the differential symptomatology and treatment of the two principal classes of pains of dental origin. In the first class, the cause of the pain is acute inflammation of the pulp of the tooth; in the second class, the cause of the pain is an inflammation of the periosteum covering the alveolus. The characteristic symptoms of acute pulpitis are, intense neuralgic pain in the region supplied by the fifth nerve, the point of the maximum intensity being at the root of the affected tooth which is the seat of the disease. The pain is increased by the inhalation of cold air, or taking into the mouth any hot or cold liquid, or bringing in contact with the tooth any hard substance, as the seeds of fruits.

The pain may be constant or intermittent; it is often lancinating in character, and frequently there will be found sensitive points on the temples, or just below the orbit of the affected side. Examination of the affected tooth will usually disclose a carious cavity which has extended so deep as to have reached the pulp cavity. The proper treatment is to wash out the cavity carefully by means of a stream of warm water injected from a small syringe, using also, if necessary, a stilette with a little bit of cotton wrapped about the end of it. After the cavity has been thoroughly emptied, a bit of cotton should be placed in the cavity after having been saturated with either of the following solutions: Menthol, 18 grs.; chloroform, 30 grs.; or, hydrochlorate of cocaine and hydrochlorate of morphia, each 4 grs., and creosote sufficient to make a paste of the consistency of cream.

If neither of the above mixtures can be obtained, pure creosote or carbolic acid may be employed. Great care must be taken to avoid burning the surrounding parts. A minute bit of cotton moistened with acid should be placed in the bottom of the cavity, and then the cavity should be filled with dry cotton; the last bit of cotton may be advantageously moistened with collodion, which will exclude the fluids in the mouth. When the pain is due to periostitis, it is different in character; the pains, though lancinating, are continuous, never intermittent, only ceasing when the inflammatory products have found their way to the surface.

The seat of the cause of the inflammation is usually a dead pulp. The tooth which is the seat of the inflammation becomes more and more sensitive, until it cannot be touched without severe pain, and the patient cannot eat on the affected side. The tooth is not sensitive to cold air, and very little or not at all sensitive to hot or cold liquids. During the first twenty-four hours the inflammation may sometimes be relieved by freely bathing the gum in the neighborhood of the affected tooth with equal parts of laudanum and tincture of iodine. Care must be taken not to apply the remedy too freely. Bathing the gum with a mixture consisting of 5 grams tincture of iodine, 1 gram

tincture of aconite, 9 grains of hydrochlorate of cocaine is still more powerful in relieving the inflammation, but in the majority of cases the only means of radical cure will be removal of the pulp of the tooth or extraction of the tooth.

The important point is to recognize the difference between inflammation of the alveolar periosteum and an acute pulpitis.

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### Brain Rest and Sleep.

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The tendency of the present time, especially in our own country, is more than at any other time in the history of our country, to mental overwork and exhaustion of the brain forces.

The circumstances surrounding active professional life of to-day are such that the nervous system must be of the most perfect character to resist the immense strain made upon it. When one observes the influences brought to bear upon one in active city business, it is a source of surprise that there are not more cases of insanity from brain exhaustion. The demand of the time is for a far greater amount of brain rest, for longer periods from business, confusion, excitement, and the care, anxiety and responsibility of everyday business. In addition to the hours assigned to one's daily employment, there are engagements made, which seem essential, which encroach so largely on one's sleep, that when we are brought to think carefully on the matter, we are surprised with the small amount of sleep with which we endeavor to get along. The fact is proven beyond a doubt, that one-third of our time should be spent in sleep—quiet, restful, natural, refreshing sleep. Instead of this, many men, especially literary men, habitually starve the brain incessantly in this matter, until they induce an incurable insomnia. An irritable man, cross, pettish, disagreeable, can nearly always be put down as one who takes little sleep. A self-composed man, quiet, thoughtful, of pleasant disposition and genial nature may be known as one who is not ashamed to acknowledge that he insists upon having his full quota of sleep. Sleep is nature's great restorer, it is the best and most natural tonic to the nervous system known. Freedom from care and responsibility, a pleasant surrounding atmosphere,

a good digestion, and full term of sleep, if demanded by every man would lengthen the life of the present generation from five to twenty years. It is a good plan for brain workers to take a nap after dinner. This plan is objected to by many physicians, but it is a good plan in many cases, perhaps not universally applicable, but of great value to those whose appetites and digestion must be encouraged, and who are troubled with a mild form of insomnia. These will stand their laborious work better, and will suffer less upon the loss of their regular sleep. There are some men who have stood an enormous amount of work with but very little sleep. These, it is believed, have the power to rest certain portions of the brain while other portions of the brain are active. This fact is applicable, however, to but very few men, the majority need an abundance of sleep, and the hours spent in sleep in these cases will be more than added to their term of years.—*Ex.*

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### The Ethics of Gum-Chewing.

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Almost constantly you meet women or girls gently moving their jaws to and fro as calmly as cows chewing their cuds. Every time you board a street car you will find two or three young women dreamily gazing out of the windows and mechanically working their jaws.

There is an individuality about the manner of chewing gum. No two women chew exactly alike. Some women chew noisily and others quietly; one will chew with her mouth closed, another with it open. A thin, nervous woman chews quickly and almost nervously. She chews gum just as she does everything else. A calm, self-possessed woman chews slowly and almost imperceptibly. You might sit beside her for a quarter of an hour before finding out that she was chewing at all. An indecisive woman slowly one moment and quickly the next with a lateral movement of the jaw. The cautious woman moves her jaws slowly and regularly by straight up-and-down using. The vivacious woman chews and talks and talks and chews, and the worst of it is you can not keep from watching her. You are tempted to

count how often her jaw rises and falls per second. You try to look the other way and can't. You keep your eyes on her until your brain fairly reels. It is maddening to watch a talkative woman when she is chewing gum. Then, no woman has ever been able to look pretty and chew gum at the same time. Nor is it for want of practice, for a gum-chewer chews when she dances, walks, rides or talks. She never stops except to eat and sleep.

While there are many objections to gum-chewing, expense is not one. An economical girl can stretch out a piece of gum so far that it will last all winter. The older the gum is the more she becomes attached to it. She knows its strong points by that time. Some women like a variety, though. I have found as high as ten pieces of gum under the edge of one table.

Under the edge of the table is a favorite place for the safe-keeping of gum, though window-ledges, shelves, chair-backs, etc., are considered fair places.

There is, however, one redeeming feature; when you see a woman chewing gum in a street car, on the street, in a store or any public place, if you can't tell who she is, you can tell what she isn't. She is not a lady. You can never make a mistake about that. There are some things that a lady prizes more than money and self-indulgence. She places a value on herself. The girl who chews cheapens herself in the eyes of all who see her.  
—*Kate I. Dein.*

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### Human and Animal Blood.

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Dr. Pesety Cevera claims that human may be distinguished from animal blood by the following method: If the blood be mixed with a little bile, small crystals are formed which are of different shapes in different species of animals. In man, it is claimed, they are right-angled prisms; in the horse cubes; in pigs right-angled prisms, very similar to those seen in rhomboids; in sheep rhomboidal plates; in dogs the same as seen in human blood; in chickens more or less regular cubes.

### The Ancestry of Chalicotherium.

Chalicotherium is a genus which appears in the lower Miocene simultaneously in Europe and America, where it has been very recently discovered. It extends into the Pliocene and then disappears. It has attracted unusual attention of late, owing to the discovery by Filhol and independently by Forsyth Major that the foot-bones of *Macrotherium*, which has been considered an Edentate, really belong to *Chalicotherium*. As the teeth are wholly different from those of the Edentates, and similar to those of the Ungulates, this genus represents a very aberrant and unique family.

The only known Ungulates which present a dentition at all similar are *Palæosyops* and *Meniscotherium*. The latter is from near the base of the Eocene, and last year in analyzing its dentition I found so many very striking resemblances to that of *Chalicotherium* that I was led to suggest that *Meniscotherium* might be the long-sought ancestral form, reserving final judgment until the feet were discovered. Marsh has very recently figured the feet of *Meniscotherium* (*Hyracops*), and upon the whole, I think they sustain the supposition that the *Chalicotheriidae* were derived from the *Meniscotheriidae*. There are some profound differences, but these are mainly such as separate primitive from highly modified forms. The resemblances consist in the tridactylism of both genera and the marked similarity in tooth structure. I will discuss these points in more detail in the *American Naturalist* for June.

HENRY F. OSBORN.

### How Medicines Act.

Medicines act, when given internally, by being transformed in nature's human laboratory. In this breaking up into ultimate elements kinetic energy is evolved from the potential energy previously locked up in the drug. This released force acts upon the structures of the body, bringing about certain changes in vital operations. It is these changes which favorably or unfavorably influence morbid processes.

### Artificial Production of Variation in Types.

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In reply to your request for a few words on the question of artificial production of variations, as presented by Mr. West in *Science* of April 22. I may say that I quite agree with Mr. West in thinking that all attempts to produce new species by mutilations of the parents are foredoomed to failure. The idea that the embryo is in any sense a *reflected* image of the parent, and consequently that any particular loss or modification of an organ in the parent during the adult life must impress itself upon the embryo, has not a shadow of a basis in embryology.

Mr. West asks: "Would it not seem the proper and only method to study the laws governing the modifications of the embryo?" If we substitute germ-cells for "embryo," the question may be answered affirmatively. If the question, as it stands, implies that modifications received during *embryonic* life, as the result of external influences, would be any more likely to repeat themselves in the next generation than if acquired during adult life, I should say that the assumption is entirely unwarranted.

The form and features of the adult are predetermined in the constitution of the germ-cell. No one denies that external conditions and influences may affect more or less the course of development; but the specific form of the adult is already settled in the germ before development begins. These are mere truisms in embryology.

C. O. WHITMAN.

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### An M.D. Self-Qualified.

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There is a sharp-witted dentist in New York City who is liable to get into legal trouble through his smartness. His name is reported as Alexander Walter, he claims to have been in dental practice twenty years, and he writes "M.D." after his name. He was arrested on four charges that he was engaged in the practice of medicine without license or diploma. In his statement he entered the plea that the letters M.D. were used to show that he was a "Mechanical Dentist," and that he had never represented himself as a doctor of medicine. His trial is still on.

### Nausea Following Anesthesia.

If the patient has a great deal of nausea after etherization, what can you do? The books generally dismiss it by saying it will pass off. When you have such a case, you will feel like passing off yourself. Iced drinks and carbonic acid water are good. One of the best remedies is chloroform, four or five drops, with two or three drops of vinegar of opium, given two or three times a day. That will sometimes allay vomiting. Another plan, when you have reason to think there will be great nausea or vomiting, is to put your patient to sleep. A great many surgeons are opposed to morphine or opium after operation. Before the operation I am apt to give a little brandy or whisky, and a little morphine hypodermically; in that way I do away with the necessity of giving a large amount of ether. Usually, after operation, I order a hypodermic—one-sixth grain of morphine. It is not only to alleviate the pain, but to quiet the patient and the stomach. It controls the nausea and puts the patient to sleep, giving the stomach and nervous system time to recover themselves.—*Brinton*.

TO DISSOLVE COCAINE.—Squibb recommends the use of a half of 1 per cent. solution of boric acid to dissolve cocaine, this amount being needed to prevent decomposition.

### CORRESPONDENCE.

MORGANTOWN, W. VA.

EDITOR DENTAL REGISTER:

*Dear Sir:*—Please give space in your valuable journal for the following, viz.: The West Virginia State Dental Society was organized at Wheeling, January 7. Constitution and By-laws were adopted and Code of Ethics of the American Dental Association. The next annual meeting of the society will be held in Wheeling on the first Wednesday in October, 1892. H. H. Harrison, President, Wheeling, W. Va.; Geo. I. Keener, Secretary, Morgantown, W. Va.

## Kentucky State Dental Association.

The Twenty-Second Annual Meeting of the Kentucky State Dental Association will be held at the Louisville College of Dentistry, Louisville, Ky., commencing Tuesday, June 21st, 1892, and continuing to the 23d.

The following programme has been prepared :

### PAPERS.

"The Care of Children's Teeth," by Dr. S. T. Butler, Leitchfield, Ky. Discussion to be opened by Dr. J. B. Alexander, Louisville, Ky.

"Effects of Acquirement Upon Heredity," by Dr. A. O. Rawls, Lexington, Ky. Discussion to be opened by Dr. J. S. Cassidy, Covington, Ky.

"Dental Caries," by Dr. M. W. Steen, Augusta, Ky. Discussion to be opened by Dr. Wm. Van Antwerp, Mt. Sterling, Ky.

"Antiseptics," by Dr. J. S. Cassidy, Covington, Ky. Discussion to be opened by Dr. J. C. Blair, Louisville, Ky.

"Defects of Palate," by Dr. G. Molyneaux, Cincinnati, Ohio. Discussion to be opened by Dr. H. B. Tileston, Louisville, Ky.

"Gold Crowns and Bridge Work," by Dr. C. G. Edwards, Louisville, Ky. Discussion to be opened by Dr. B. Oscar Doyle, Louisville, Ky.

"Educating the Public," by Dr. Henry Pirtle, Louisville, Ky. Discussion to be opened by Dr. B. Oscar Doyle, Louisville, Ky.

A paper by Dr. J. F. Rees, Owenton, Ky. Subject to be announced.

### CLINICS.

All Clinics will be given in the Infirmary of the Dental College, at such hours as may be announced.

The State Board of Examiners will meet daily during the session to examine and register applicants.

The Willard Hotel has been selected as head-quarters, and a special rate arranged for ; there will also be a reduction in railroad fares.

A cordial invitation is extended to all Members of the Dental Profession.

Members or visitors having anything new in appliances, or methods, will have proper time allotted to them by applying to the Executive Committee.

DR. J. H. BALDWIN, Secretary,  
Louisville, Ky.

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## EDITORIAL.

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### **The World's Columbian Exposition.**

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The scope of the Exposition has grown as the work has progressed; more than seven thousand six hundred car loads of building material have already been received on the Exposition grounds. The preliminary estimates of the cost of the work are entirely inadequate to such an Exposition as the people of the United States expect to be produced under national auspices. The classification comprises exhibits on an enormous scale in departments that have heretofore either been ignored or lightly treated in great expositions, or made the subject of special expositions at great expense. The area embodied in the Exposition grounds will be nearly three times that of the greatest Exposition heretofore held. The enthusiasm and interest of the people of the United States has kept pace with the demand for increased appropriations, and many of the States and Territories have recently added largely to their former appropriations, which now aggregate three million, one hundred and eighty thousand dollars; Maryland and New York, respectively, have voted sixty thousand and three hundred thousand dollars; New Jersey has increased its appropriation of twenty thousand by fifty thousand dollars; Iowa, its fifty thousand by one hundred and twenty-five thousand dollars; Massachusetts and other States have also added largely to their former appropriations. The World's Fair Board for Kansas is promoting a plan whereby it is expected that the expense of erecting the Exposition building for that State will be borne by school pupils. The proposition is to have all of the schools in the State observe a "World's Fair Day," by holding an entertainment with music, recitations, tableaux, etc., to which a small entrance fee will be charged. The proceeds will be sufficient to pay for the State building. Over the main entrance to the structure, it is proposed to have the words: "Erected by the School Children of Kansas."

The World's Fair appropriation by foreign countries, as far as reported, aggregates more than four million, five hundred thousand dollars. Exhibits from foreign ports are already beginning to arrive at New York in considerable numbers, and the Secretary of the Treasury has instructed the collectors of Customs at all United States ports, that the transportation of articles intended for exhibit at the Exposition must be facilitated in preference to all other importations.

Chief Willard Smith, of the Department of Transportation, is arranging for a large number of interesting exhibits; recently he has been paying special attention to the marine section. In it will be models of the old frigate "Constitution;" the flag-ship of Nelson; a caravel from Spain, the exact copy of the "Santa Maria," in which Columbus made his first voyage; canoes of the native traders of the West Indies, hewn from a single tree and propelled by twenty-five paddles; models of such modern racing schooners as the America, Mayflower, Puritan and Volunteer. All sorts of steamers for river navigation, steel-screw ferry-boats, electric pinnaces, naptha launches, ketches and brigantines, sloops and barques of the Atlantic coast in 1714, rafts, arks, barges, keelboats and other craft.

From Holland an offer has been made to the Holland Society of New York, and the St. Nicholas Society of Brooklyn, to construct and present to them an exact reproduction of the Half Moon, the ship in which Henry Hudson discovered and explored the river which bears his name. The societies named have accepted the offer, and are planning to fit up the ship as a club house, and to take it to Chicago, both to be exhibited and to be occupied by their members during the Exposition.

One of the attractive features of the Australian exhibit will be the tree ferns from Sidney, New South Wales. These have always been a popular exhibit at London Expositions. They vary in height from eight to fourteen feet.

An immense wooden box, bound in iron, was recently found at Helsinfors, in Finland, by workmen engaged in excavating in the cellar of an old house. Upon opening the box, the men found that it contained a large parchment and a quantity of

pieces of iron of odd shapes. Being unable to make out the contents of the parchment, they carried it to Mr. Rizeff, the nearest magistrate, who found that it was written by Father Suger, at one time minister to Louis VII of France. It was an elaborately written treatise upon the use of steam as a motive power, and further examination revealed that the bits of iron were numbered parts of a rudimental but complete steam engine. It is proposed to fit the parts together, and to exhibit this pioneer steam engine at the Exposition.

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### Bibliographical.

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A TREATISE ON DENTAL JURISPRUDENCE FOR DENTISTS AND LAWYERS, embracing the following subjects: Dental Jurisprudence—Dental Expert Testimony—Identification by Means of the Teeth—Dental Malpractice—Cocaine Poisoning—Fracture of Maxilla during the Extraction of Teeth—Injuries and Death during Anæsthesia—The Jurisprudence of Dental Patents, etc., etc. By Wm. H. Redfuss, D.D.S., author of "Dental Massage," member of the Odontological Society of Pennsylvania, New Jersey State Dental Society, Dental Protective Association of U. S. A. Published by the Wilmington Manufacturing Co., Philadelphia, Pa.

This is a work that has been greatly needed in the dental profession. This subject has nowhere before this had an extended treatment; the only thing like an exception to this statement is the brochure upon this subject in the "American System of Dentistry."

In the preface the author says: "The purpose of this volume is to supply the dental and legal professions with a comprehensive treatise or text-book, covering the subject of Dental Jurisprudence, showing the relations the dental practitioner sustains to the law. It is true that the general principles of Medical Jurisprudence apply equally as well to the dental practitioner, but there are certain special questions which arise exclusively in dental practice, undoubtedly creating a field for a distinct and separate jurisprudence for dentistry. The object of this work is

to produce a book of reference for technical points of a dental character, enabling those who are desirous of obtaining information or quoting opinions or decisions relative to any dental question, to do so without extensive research."

All the principal leading points of a legal character pertaining to the practice of dentistry are definitely considered in detail, the preparation of which has involved necessarily great labor on the part of the author, as he has drawn from every practicable source for the presentation of the various subjects.

There is an appendix of 250 pages, giving a history of dental legislation, and also every dental law that has ever been enacted in this and foreign countries prior to the present year. This alone makes the work very valuable to every dentist, and it should by all means be in the possession of every practising dentist in the country. It may be obtained of the Wilmington Dental Manufacturing Co., Philadelphia, Pa., or through book-sellers generally.

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### Hymeneal.

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MARRIED on Saturday, May 14, 1892, Dr. Alice Sherman, D.D.S., to Mr. Joel Barber, both of Lake Geneva, Wis.

Congratulations are now in order, not only from the friends and acquaintances of their home and vicinity, but from a host of friends of the bride made during her residence in the University of Michigan.

We will venture to speak for them till she can hear from each personally.

We congratulate each for having the best companion in the world.

We will suggest to Mr. Barber that he may find it necessary to submit to a division of his good wife's affection, for she did love her profession, and doubtless does yet, as we are informed she will continue her dental practice at her former office.

May their pathway through life grow brighter and brighter till they arrive at the home of perfect bliss.

# THE DENTAL REGISTER.

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## PROCEEDINGS.

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### **Eighteenth Annual Session of the Mississippi State Dental Association, Columbus, May 3, 4, and 5, 1892.**

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The Mississippi State Dental Association convened its Eighteenth Annual Session, in Concordia Hall, Columbus, Tuesday, May 3, 1892.

The Association was called to order by Dr. W. W. Westmoreland, Chairman of the Executive Committee, and opened with prayer by the Rev. J. L. Johnson, Pastor of the Baptist Church.

Officers present :

Dr. D. B. McHenry, Grenada, President.

Dr. A. A. Dillehay, Meridian, First Vice President.

Dr. N. N. Wofford, Columbus, Third Vice President.

Dr. W. E. Walker, Bay St. Louis, Recording Secretary.

Dr. P. H. Wright, Senatobia, Corresponding Secretary.

Drs. W. W. Westmoreland and N. N. Wofford, Columbus, and Dr. P. H. Wright, Senatobia, Executive Committee.

Dr. Westmoreland introduced Col. S. M. Meek, of Columbus, who delivered an eloquent address of welcome. Rarely has such a noble tribute to the rapid advancement, and the scientific standing of the dental profession been paid. After alluding briefly to his surprise that he, a lawyer, should have been selected to welcome the Dental Association, he said as he ever felt a lively interest in whatever adds to the culture, advancement and elevation of any one of the learned professions, it was therefore with sincere pleasure and unalloyed gratification that he undertook the task of extending to one and all, individually and collectively, a warm and hearty welcome to the hearts, homes and firesides of the residents of Columbus.

After a glowing and well-merited tribute to the claims of Columbus to her honored name, a city which, in the words of a noted scholar, "looks like a little city that had gone on a pic-nic, and camped for a time, amid forest trees and flowers;" with her broad and well-shaded streets, handsome residences and beautiful flower-gardens, houses of worship of all denominations, noble educational institutions, and great manufacturing establishments; her active and energetic population, the men cultured and refined, her women gentle, fascinating and beautiful, he spoke of the great benefits of associated effort in any occupation, calling or profession, as being the great hour and hand guide for the accomplishment of good.

The dental profession, based upon the loftiest principles of art and science forming no exception, but forcing its way to solid strength and permanent prosperity, through the combined power of associated effort.

Reviewing the past history of dentistry, Col. Meek said that he had been astonished in the reading and investigation he had given the matter, in attempting to prepare himself for this occasion, to see the lofty pinnacle to which it has risen; until to-day, its members are almost countless, its magazines, periodicals, journals, and other publications being weekly, if not daily, issued by the press; dental schools and colleges are springing up in nearly all the States of the Union; laws have been found for the direction, regulation and control of those desiring to enter its ranks, and the prospects before it are gratifying and encouraging. Thus, he said, safeguards are abundantly thrown around the profession, and the public cannot be imposed upon by incompetent men if the Board of Examiners perform their duty faithfully and well. Blacksmiths, silversmiths and jewelers must stick to their callings, and not tamper and tinker with that of which they know nothing. Quacks, pretenders and charlatans must and will stand aside if this Board, appointed by the Governor—men eminent for their learning and ability—meet the demands of a confiding public.

To this eloquent address of welcome, Dr. R. K. Luckie, of Holly Springs, the retiring President of the Association responded,

in language equally fluent and eloquent. He spoke of the rejoicings which filled the hearts of all when Columbus was selected as the next place of meeting. He said that all Mississippians were naturally proud of Mississippi, with her vast, undeveloped domain, inviting the agriculturist with promise unequaled, a climate almost matchless, a soil as fertile as the valley of the Nile, with millions of acres of virgin forests—with schools, colleges, churches and missions, all in a prosperous condition. He paid a well-merited tribute to Columbus—as a city of fragrant flowers, of taste and refinement, of beautiful homes, of great men and noble christian women—a city of historic associations and traditions, worthy to stand in perpetual memory of the most adventurous navigator that ever braved the ocean's waves, a heroic man, a man of scientific, philosophic, religious faith, of indomitable perseverance under intimidating difficulties; a man who dared to stand before kings and advocate a project decided as visionary. He lamented the too-well-known lack of enterprise in the South, which for so many years has left the manufacture of the great staple—cotton—in the hands of the Old and New England, whereby millions have been lost annually; and expressed his gratification that Columbus had taken the initiative in starting this great industry. The cotton mills of Columbus having proved a great financial success, having won an enviable reputation for high-grade products. He spoke in eloquent terms of the "Industrial Institute and College" of Columbus, a State institution for girls; he said that, though Mississippi had no gold, no silver, no copper, no rubies, sapphires nor diamonds, yet no country in the world had jewels of more priceless value than the pure and lovely girls of that institution; jewels being polished by the State, and fitted to beautify christian homes and brighten human hopes. He then spoke of the Mississippi State Dental Association, and portrayed its growth and progress from the date of its birth, April 21, 1875, through eighteen years of varying fortunes, standing well the test of time. Through its influence, wholesome dental laws have been enacted, dental education has been encouraged. Through associated effort, its members have been stimulated to the highest efforts in scientific investigations and

in the introduction of new methods of work in all departments—the progressive dentist of to-day being prouder of his calling than he has ever been. Advances are being made all along the line; scientific investigations are more thorough; new discoveries are being made; new instruments, materials and appliances are being introduced; the standard of dental education has been elevated, and there is constant desire for higher, nobler and better things. Good things have come; better things are yet to come; better, not only for the profession, but for the public at large. We can truthfully say no one can foretell the future of our loved and honored profession.

Dr. Westmoreland next introduced Dr. D. B. McHenry, of Grenada, the President of the Association, who proceeded to deliver the

#### ANNUAL ADDRESS.

This, though brief, dealt with many points of practical importance to the association as a body, and to the individual members. He urged the adoption of some plan whereby members might come prepared to intelligently discuss the papers presented; the more active work of the members appointed in each judicial district; to see to the enforcement of the dental law of the State; the discussion of, and the means of securing changes in the dental law somewhat surreptitiously passed by the last legislature, and which, as it now stands, antagonizes both the Association and the Board of Examiners, and the appointment of a committee to look after the interests of the dental profession of the State of Mississippi, at the Columbian Dental Congress and in co-operation with the local members of the Special Committees.

After a short recess for roll call and payment of dues, on motion of Dr. Westmoreland, the Lowndes County Medical Association, in session in Columbus, were invited to seats in the Dental Association with the privilege of discussion.

During the sessions, Drs. Brownrigg, Vaughn and James availed themselves of the invitation, adding greatly to the interest of the discussions.

Prof. Francis Peabody, of the Dental Department of the University of Kentucky, Louisville, honorary member of the

Association, was introduced, and made some remarks in explanation of an instrument or appliance to be used in his clinics, in the treatment of root canals; the invention of Prof. John C. Blair, demonstrator of operative dentistry in the Dental Department of the University of Kentucky. The instrument consists of a small cylinder with a rubber bulb as in a syringe; the cylinder being filled with crystals of iodoform and heated over a lamp, the iodoform is sublimed, the fumes, by pressure on the bulb, being forced through the nozzle into the roots of teeth filled with putrescent pulp, destroying all forms of germ life, overcoming one of the difficult features in the treatment of root canals. The instrument is new, and its present form crude, and the odor of the fumes of iodoform forms an objection to its use in the office, but it offers great possibilities in experimenting with other germ-destroying agents, perhaps menthol. In the Infirmary of the Louisville College of Dental Surgery, it has been used in three or four hundred cases which would otherwise have been condemned to the forceps; only one case, treated by a student, proving unsatisfactory, and in that, it was found that the root canal had not been opened into. Teeth which were extracted, after being treated in this manner, on being ground down on the lathe were found to be perfectly permeated with iodoform, even through the tubuli to the peridental membrane. The iodoform vapor thus introduced is deposited in crystals to the very apex of the root canal, forming a desirable permanent filling material at that point, as it is soluble only in ether or chloroform. It has been found, in Dr. Blair's experience of two years with it, very valuable in the treatment of blind abscess, of loose teeth, and in teeth that are too tender and sore to be treated by the old methods. In one case after ten days usual treatment, of a very loose, inferior bicuspid, with no diminution of soreness or swelling; one application of this new treatment, by Dr. Blair, cured all soreness and swelling, and at the end of six days, the tooth was as sound as any other tooth in the jaw. Another case given was that of a superior lateral incisor, which was filled with the debris of a decomposed pulp, and had given trouble for four years; a single application subdued all irritation, and the tooth

was filled immediately after the deposition of iodoform crystals from the vapor. In all cases Dr. Blair removes all debris, applies the vapor and fills immediately. He has had but one failure in two years. In conclusion, Dr. Peabody stated that his own personal experience with the new method had been limited; this "was not his baby, he was only its nurse." He did not want to overlook its imperfections, but thought that in a future modified form it offered great possibilities.

Owing to some misunderstanding in the notification of Chairmen of Sections, but one section was prepared with papers—that of Operative Dentistry, which was called at the night session of the first day. The Chairman, Dr. Geo. B. Clement, (Macon, Miss.) responded with an oral discourse, explanatory of a series of diagrams which he displayed, illustrating various types of incisor tooth forms; also similar teeth mounted in plaster, in support of a theory as to "Primary Causes of Decay," found in defects in enamel structure. He said that it was now universally admitted that it was of prime importance that the mouth, being the entrance of the alimentary canal, should be pure, clean and healthy. It seemed paradoxical that the teeth, though the hardest tissue of the organism should be the first to decay, while the brain, the softest tissue of all, is the last to decay. It is rare to find a human being with absolutely perfect teeth. As dentists we are called upon to repair defects and restore them to normal utility. It should be our work to prevent these defects, but patients usually come to us when it is too late for preventive measures.

Dr. Clement's first chart represented the lingual surface of incisors in which were seen certain fissures—defects in enamel structure, affording points where decay first starts. In a chart of the labial surfaces, similar defects were seen at the junction of the enamel and the cementum where a crevice would frequently be found. The natural defects are the initial or primary causes of decay, and all such fissures and crevices, it is claimed by Dr. Clement, should be cut out and filled in the best manner with gold, thereby preventing decay, which will otherwise be inevitable through the lodgement of particles of food, the formation of

acids, and the generation of germ life. We do not want to wait until the patient is suffering from extensive ravages of decay. The approximal surfaces of teeth decay at the points of contact through pressure and the friction of natural lateral movements. Three bicuspid, imbedded in plaster were passed around in support of this theory; one had a slight fissure, another a small cavity, the third a large carious cavity. Dr. Clement claimed that if the second and the third tooth had been filled when in the condition of the first, the caries of their present condition would have been prevented. When there is no fissure, but only an abrasion caused by friction and pressure, the teeth may be separated, and the surface only polished. He said that cutting out and filling a fissure is an aseptic operation; if delayed, the use of antiseptics becomes necessary. The diagrams represented three types of incisor teeth—one where they touch only at the incisor edge, with a narrow base at the gum margin; in this type we will find a small point of decay at the point of contact. Another type has a broad base touching only at the cervical margins where also we will find decay, due to pressure, though food will lodge higher up. A third type consisted of square, straight sided teeth; these touch the whole length of the sides, and if pressed apart with rubber, initial points of decay will be found all along the sides. Whether we adopt the germ theory or the acid theory, makes no difference in the facts; wherever continuity of tooth surface is interrupted decay is invited, even the slightest defect, which the eye, or even the instrument may not be able to detect. In perfect tooth form the external shape indicates the shape of the pulp cavity. In the narrow base tooth we are very liable, in excavating, to strike the pulp. In the bicuspid we are liable to touch the horns of the pulp. All defects or fissures should be excavated at once and filled with gold; all abrasions should be separated and polished.

In the discussion of the subject, Prof. Crenshaw, of the Dental Department of the Southern Medical College, Atlanta, Ga., Honorary Member of the Association, said that the square teeth represented in the diagram, and the narrow based incisors touching only at the cervical margins, instead of being typical tooth

forms, were very unusual except as the result of slashing and filing.

Dr. Clement admitted that they were somewhat overdrawn, to illustrate his theory.

Dr. Crenshaw said that the speaker was correct as to the correlation between the external shape of the teeth and the shape of the pulp cavity.

By the study of the typical forms of teeth, we are enabled to make more satisfactory fillings, and especially to avoid the horns of the nerves.

Dr. Westmoreland, (Columbus,) thought we should give more study to the prevention of decay; that children should be safeguarded in embryo, so that they would come to us with good teeth. He considered eruptive diseases in childhood a great source of defective tooth structure and consequent decay. The defects in the labial aspect of the incisors, pointed out by Dr. Clement, were in nine out of ten cases caused by eruptive diseases occurring while the teeth were forming.

Prof. R. R. Freeman, (Nashville, Tenn.,) of the Dental Department of the Vanderbilt University, and Honorary Member of the Association, wished to endorse the words uttered as to the early care of the teeth, this being the greatest importance as to refinement, purity and healthfulness. From the time there is but one tooth, watchful care must be taken to secure cleanliness. If food was kept thoroughly cleaned out, there would be no chemical abrasion—acids are carried by capillary attraction to the point of contact. He is so thoroughly convinced of this necessity of thorough cleanliness that he puts across the corner of his bill-heads the motto, neither original or new, but always true, "Clean teeth don't decay." It will not do to begin at three years of age, nor at six months; the work must begin, or should have been begun three generations before the child was born. Little children forget to brush their teeth, that is true, but not more than to wash their faces or brush their hair; parents should look after the former as they do after the latter. The secretions in the mouth of a child are acid, as evidenced in the green stain, but this must be removed, and its renewal prevented by proper

care. It is not the persons of most robust development that live the longest, but those who take the greatest care as to how they live. It is so with the teeth. It is not those that have the best structural development that will last the longest, but those of which care is taken. Establish correct habits in the earliest years of a child's life, and the work is done.

Dr. A. A. Dillehay asked as to the causes of the decay when alkaline fluids predominated.

Dr. Clement replied that normal mouth fluids are always alkaline, but that local acids cause the trouble.

Dr. W. E. Walker, Bay St. Louis, read a paper on "Practical Anæsthetics." A synopsis follows:

He spoke of the dental profession as being eminently humanitarian, that while called upon to relieve pain, or to give prophylactic treatment, yet, in the very nature of the case, in many of the operations to be performed, pain is an inevitable factor, except by the employment of the preventive means found in the judicious use of anæsthetics. After briefly reviewing the evidences of the use of anæsthetics or hypnotic agents by the ancients; and the discovery of modern anæsthetics, that proud boast of the dental profession, Dr. Walker spoke first of hypnotism as an anæsthetic agent. He said, if the half that is told be true, we would seem to have in hypnotism, a valuable adjunct to dental practice. If without any interference with pulse or respiration, such complete insensibility to pain can be induced by the mere will of the operator, that the severest and most painful tests can be applied to the unconscious patient, why not extract teeth, or operate upon the dental pulp? The Dental Review, in July, 1890, republished from the medical news, the report of an interesting trial of hypnotism as an anæsthetic agent, employed by Milne Bramwell, in the presence of upwards of sixty medical practitioners and dentists. Among other painless operations, three teeth were extracted for one woman and sixteen stumps removed for another, the latter not even experiencing any subsequent soreness of the gums or mouth. At a meeting of the Chicago Anæsthetic Club in October, 1890, Prof. Anderson, of Denmark, lectured on this subject, and gave a number of severe tests.

At a subsequent meeting of the same club, Prof. Norman J. Roberts gave a clinic with hypnotic demonstrations before an audience of physicians and dentists among whom were mentioned, Drs. L. P. Haskell, Jno. S. Marshall, J. J. R. Patrick, and others well-known to the dentists of Mississippi. Many severe tests were applied, respiration and pulse remaining normal, as tested by a physician present. Prof. Roberts predicts that hypnotism will, within a few years, take the place of ether and chloroform, specialists being employed to hypnotize patients for all operations when anæsthesia is desired.

Dr. Walker said that he would confine his paper to the consideration especially of Local Anæsthetics; first—because the operations the dentist is most frequently called upon to perform are not such as would either *require* or *justify* the use of general anæsthetics, not only because of the risk and inconvenience attending their exhibition, but also because of the frequent impracticability of securing proper antecedent conditions of the patient, and secondly, because the operation for which an anæsthetic is most frequently demanded—that of extraction of teeth—is so often for transient patients with whose constitutional idiosyncracies and organal peculiarities we are not familiar.

In the treatment of *sensitive dentine*, Dr. Walker relies upon warm air gently applied, with encouraging sympathetic words and with gentle firmness. Herbst's obtundent—a saturated solution of cocaine hydrochlorate in chemically pure sulphuric acid, to which solution sulphuric ether is added to the point of saturation, often gives very satisfactory results. The application of ether spray causes pain quite as severe as the excavation of the cavity, excellent results are claimed for the combination, 10 parts chloroform, 15 parts ether, 1 part menthol, used in the hand atomizer. He also quoted Dr. Geo. Earnes instructions: "put on the dam, secure perfect dryness by using warm air, and apply cocaine dissolved in chloroform in a 10 per cent. solution;" also Dr. Littig's formula: "a saturated solution of cocaine in glycerine," as being worthy of trial.

For the *removal of the pulp* with little or no pain, Dr. Walker has used successfully Dr. A. W. Harlan's preparation, a solution

of 10 grs. hydrochlorate of cocaine in 90 minims of sulphuric ether, left in contact with the pulp for five minutes.

For the *extraction of teeth*, Dr. Walker early adopted the use of cocaine. To secure a reliable aqueous solution, he adopted the plan of having a number of small vials, each containing such a definite quantity, by weight, of hydrochlorate of cocaine crystals that the addition of distilled water, up to a file mark on the vial at the time of using, gave ten drops of a fresh 4 per cent. solution without any delay or uncertainty. This, however, he said, was obviated by the introduction of Parke, Davis & Co.'s hypodermic tablets, one of which dissolved in ten drops of water, gives as much of the 4 per cent. solution as it is advisable to use "above the shoulders."

After citing a number of authorities on the use and risks of cocaine and antidotes, and relating some incidents in practice, Dr. Walker spoke of his experience with the following formula, given to the dental profession, about a year ago, by L. C. Wasson, of Topeka, Kansas, through the Kansas State Dental Association. Dr. Wasson had received it from Dr. Guibor, a specialist in the treatment of diseases of the nose and throat:

|                        |          |
|------------------------|----------|
| Cocaine hydrochlorate  | gr. 20   |
| Sulphate of Atropia    | gr. 1-10 |
| Carbolic acid crystals | gr. 10   |
| Chloral hydrate        | gr. 5    |
| Aqua pura add          | one oz.  |

Although the maximum hypodermic dose of this preparation, two syringes full or 60 minims, for extensive operations, contains 2 3-10 gr. cocaine, the hypodermic dose being  $\frac{1}{4}$  to 1 gr. the whole making a 6 1-5 per cent. solution of cocaine, yet it is so combined with antidotal and localizing agents that its use is much less objectionable than cocaine alone, in a 2 per cent. or a 4 per cent. solution in much smaller quantity.

Of the other elements, Dr. Wasson says, "(1) atropia in small doses, as given in hypodermic injections from this preparation is a cardiac, respiratory and spinal stimulant, which tends to contract the toxic effects of the cocaine; (2) carbolic acid aids the chloral

in localizing the anæsthesia, and both tend to increase the anæsthetic properties of the cocaine, and localize its effects, while (3) both aid in the preservation of the solution, which is, in itself, quite desirable, as the ordinary cocaine mixture is almost worthless at the end of a week, while this preparation is good for months." Dr. Walker said that he had used this preparation very extensively for hypodermic injections in the gum tissue, for the past eight months, and had found it more satisfactory than anything he had used, especially for tooth extraction. Though he had been very cautious in his previous experience with cocaine, never to inject more than  $\frac{1}{4}$  gr., yet he frequently found it necessary to use the proper antidotes to combat toxic symptoms; yet with this preparation, though he frequently injected 30 minims, containing from 1 to 1.6 grs. cocaine, he had not had one case requiring any antidote, and only three cases of very slight systemic effects, scarcely worthy of the name. These three cases he described in detail. He cautioned, however, as to one unpleasant feature sometimes attending the injection; where the quantity injected is very large, and the gum tissue very dense and unyielding slough may follow, confined, however, strictly to the area subjected to pressure. He had had three cases of this nature, only one of which threatened to become serious. The superior central incisors being very badly decayed, it was necessary, in using a Perry Separator, to press severely and high up on the gum; this caused so much pain that the injection was resorted to with very satisfactory results at the time. The operation was rendered painless; but a slough supervened which being posterior to the incisors on the median line threatened possible rupture of the anterior palatine vessels with probably severe hemorrhages. Fortunately it did not extend so deep, and healed without any serious results.

In conclusion, Dr. Walker regretted that he had not been able to carry out his intention of experimenting with cocaine phenate as a local anæsthetic. According to Merck's Bulletin "its practical insolubility in water is a physical property most favorable to its therapeutic action, as it cannot be readily washed away from its site of application by the lymph currents. Its local action is

therefore more intense and prolonged. In consequence of its insolubility very small doses have effect, while, on the other hand, excessively large doses ( $15\frac{1}{2}$  gr.) are not prone to produce toxic symptoms; this makes it of value in topical applications—as by the brush—where the dosage cannot be regulated with exactness.”

In a private letter received from Merck's Laboratory since reading the above paper: Dr. Walker is further informed that the percentage of cocaine alkaloid in cocaine phenate is about 75 per cent. That it is soluble in alcohol of from 30 to 50 per cent., and that as an anæsthetic in dental operations it produces complete topical anæsthesia without subsequent derangement of the general system. An alcoholic solution containing 1 part of the drug in 1250 of alcohol was the form employed.

Dr. Brownrigg, practicing physician of Columbus, being requested to open the discussion, said that he felt diffident in speaking on the specialty of dentistry, a profession whose labors add to the longevity of race; but that in the able and interesting paper to which he had listened with pleasure, he noticed that ether had been omitted, and he wished to enter a plea in its behalf. He hoped they would investigate its merits as an anæsthetic and try it. That chloroform was very objectionable, many of the great hospitals having repudiated its use. But he considered sulphuric ether entirely harmless; it could be used with perfect safety. He had employed it largely for twenty-seven years, and almost exclusively for nineteen years. Full anæsthesia is not necessary in minor operations, analgesia is all that is necessary. Operations in dentistry are of such an awakening nature that the patient awakens readily, and there is no subsequent trouble from blood in the mouth. The very short time required to produce analgesia with ether should make it popular with dentists when time is very valuable. Cocaine is undoubtedly valuable, but it has its risks and dangers, while ether is absolutely harmless.

Dr. Walker stated that he had not included ether nor any other general anæsthetic in his paper which he had purposely limited to local anæsthetics as being practicable and all-sufficient for the average minor operations of the dental surgeon.

Mr. Foster, in charge of the Dental Exhibit from the S. S. White Atlanta Depot, asked the privilege of the floor that he might speak of the merits of chloride of ethyl as a local anæsthetic.

Dr. Westmoreland stated that Dr. James, a local physician, was an expert in the art of hypnotism, and would give a clinic the following day.

Dr. W. H. Marshall, (Oxford,) had used chloride of ethyl to a limited extent, but found that it would not keep in a temperature above 60°. Had been able to excavate the most sensitive dentine painlessly, also found  $\frac{1}{2}$  tube sufficient for painless extraction.

Dr. R. R. Freeman wished to take exception to the idea expressed in the paper that dentists were not as fully acquainted with the constitutional idiosyncracies of their patients as the physician. It should always be remembered that dentists introduced anæsthesia, and we should uphold the honor of our profession. He was glad that ether had been spoken of; that he both used and liked it, but did not class it as absolutely harmless. Nature gives pain as a protection, and he wants the extraction of teeth to be painful as a safe-guard against its ruthless practice. Though he does not employ the subtle force of hypnotism yet he believes the dentist may show such force of character and power of command, that the patient will yield to the inevitable; some might perhaps call it hypnotism. Any person can anæsthetize himself by rapid breathing or rather blowing; when a patient will do this for a few minutes, the smallest amount of ether in a very few inhalations will suffice for the extraction of even four or five teeth. But in its use we should impress upon our patients that we are taking into our hands an agent that requires extreme care. "Beware how you handle it." He said that he would withstand the temptation of all the gold of Ophir rather than permit the use of chloroform in his office. He regarded the use of nitrous oxide gas as similar in effect to plunging a persons' head in a bucket till on the verge of drowning, and then extracting his teeth—only there was no water to pump out! But the appearance of the person in either case would be equally repulsive. His experience with cocaine had been such that he

did not want any more of it; it excites hysteria and other evil influences. Pure water, or even "make believe," is enough if you have control over the mind of the patient.

Dr. Walker said that he hoped he was not generally so misunderstood as that he would belittle his profession. He had the highest possible opinion of the attainments of dentists, and was far from denying them the privilege of administering general anæsthetics, but there were too many preliminary requirements; we would often have to send them home for looser garments; we must have a third party present, and this was not always convenient. As to not understanding the constitution, etc., of our patients, the patients whom we do understand, and who are under our care, are not as a rule those for whom we extract teeth; we generally save their teeth. But those for whom we do the most extracting are "transients" whom we have perhaps never seen before, and may never see again.

Prof. Peabody wished to go on record as saying that no systemic anæsthetic known to-day is absolutely free from danger; whether it be ether, chloroform, nitrous oxide gas or cocaine. If Dr. Freeman was capable of producing anæsthesia with rapid breathing and sulphuric ether in one, two, or three minutes, he must have sufficiently strong powers of hypnotism to make them believe he was operating painlessly. He had used sulphuric ether for the extraction of teeth, but he had known cases where he had used half a pint of ether, and taken thirty minutes to do it, without producing sufficient anæsthetic effect to operate painlessly. With the various temperaments and idiosyncracies of individuals different effects are produced upon different people, and on a stranger no one can say what the effect will be. The most skilled physicians cannot. With the known average of one death in 1,000 from chloroform, one in 10,000 from ether, and one in 100,000 from nitrous oxide, we are not justified in resorting to them for minor operations. There is a well-known case where a lady had been under her physician's care for fifteen years; he had safely administered chloroform to her sixteen times, the seventeenth time she died from it. It is true that in the sixteen times when it had been administered safely, she was prone upon

a table, while the seventeenth time she was reclining in a chair; but that is where our patients usually are. "No sum of money would induce me to allow it used in my office, though I would use it for the extraction of teeth at the patient's residence with the physician present." As to rapid breathing, he considered it one of the most trying experiences he had ever undergone, and he doubted if any person could breathe one hundred times in a minute. Nitrous oxide gas acts by asphyxiation, it cuts off the nerves of sensation. If a person will draw in a long breath four or five times, and then fill the lungs to their fullest capacity and hold their breath, the most sensitive cavities can be excavated. For the extraction of teeth, the patient may hold the breath till the critical moment, but then the inevitable *cough* will expel the breath, and the effect is lost. So-called "Christian Science" is nothing but fanaticism; it is not christian, it is not scientific; it is the old story of the influence of mind over matter. The subject of anæsthesia is one of the greatest interest. It should be generally known that, notwithstanding the report of the Commission of Hyderabad, India, that we are liable with chloroform to have paralysis of the cardiac muscles, that sulphuric ether affects both the heart and respiration; that nitrous oxide gas is an asphyxiating agent. If cocaine is used, have ammonia and nitrate of amyl at hand. In Europe the use of these things is denied to the dental surgeon, they are not considered capable of understanding these things, even though endowed with the same amount of brains as the general surgeon; perhaps it is thought that there is something in the study of dentistry that renders the brain torpid! But, whether physician or dentist, the use of these agents is never unattended with danger, and therefore each one should thoroughly familiarize himself with the action of each.

Dr. Walker said that he was much gratified that his paper had called out these criticisms and this discussion, as it has been said that "it takes a good paper to call out a good discussion."

But we must bear in mind that accidents, sometimes fatal, occur even at the hands of physicians who have known their patients all their lives. Our own patients whom we know as

well, want their teeth saved. For "transients" there is less risk in a local anæsthetic, which with less time, less trouble and less inconvenience, fills all the needs of the occasion.

On motion of Dr. R. K. Luckie, (Holly Springs,) the discussion was closed and the subject passed.

The second day was devoted to clinics.

Previous to the night session of the second day, Dr. E. P. James, of Columbus, gave an interesting clinic in "hypnotism," though no person was found for a dental operation under this influence, a pin was passed through the ear of the subject, and other remarkable tests given.

At the night session, second day, a letter was read from Dr. Gordon White, President of the Southern Dental Association, giving a cordial invitation to all members of the Mississippi State Dental Association, to attend the meeting of the Southern Dental Association at Lookout Mountain, July 26, 1892.

On motion of Dr. Westmoreland, Dr. R. R. Freeman was elected an Honorary Member of the Association.

On motion of Dr. A. H. Hilzim, of Jackson, members were put in nomination, and the five following, having received the highest number of votes cast, were declared the choice of the Association for recommendation to the Governor of the State, for appointment on the new Board of Dental Examiners, according to the amended Dental Law passed by the last Legislature, viz:

Dr. W. E. Walker, Bay St. Louis; Dr. B. Clements, Macon; Dr. Geo. Rembert, Natchez; Dr. P. H. Wright, Senatobia; Dr. J. Warriner, Corinth.

Dr. B. A. Vaughn, a practicing physician of Columbus was introduced to the Association, and addressed them in the interests of two bills now pending before U. S. Congress.

At the close of his address the following resolutions were introduced and carried, and ordered sent to the State Senators and Representatives in Congress:

*Resolved*, That we approve of and urge the passage of the bill creating a Department of Public Health;

*Resolved*, That we approve of the bill "Pure food," and urge its passage.

There being no paper from the section of "Prosthetic Dentistry," the subject in general was discussed at some length.

Dr. D. B. McHenry, Grenada, President of the Association, presented a new device for partial plates, which he terms the "Skeleton Lock Plate." This is a narrow plate, strengthened by an imbedded gold band, and retained firmly in place by the insertion in a posterior tooth, on either side, of a pin with rounded projecting head, under which the plate springs. It cannot tip or fall out, though it is easily removed by the patient. It forms an inexpensive substitute for bridgework, and does away with the objectionable grinding down and dressing of the natural teeth necessary for the caps and crowns of bridgework.

Prof. R. R. Freeman, Professor of "Mechanical and Corrective Dentistry" in the Dental Department of Vanderbilt University, expressed himself as fully repaid for the trip in seeing this device alone, which he considered well worthy the attention of every dentist. He said that he was slow to pick up new devices, but he should certainly adopt this one.

Of the "Anchor Plate" presented to this Association last year by Dr. W. H. Marshall, of Oxford, Dr. Freeman said that he had found it one of the needful things. It had bridged over great difficulties in the adaptation of partial plates. Though very simple in construction, it accomplishes all that is claimed for it by the inventor. In some cases one, and in other cases, the other of these two new methods will be found the one thing needed—*par excellence*.

Drs. Nesbit, Hilzlm and Spinks, who have been inventing "Anchor Plates" during the past year, spoke highly of the great satisfaction the method has given, especially where suction plates have been found objectionable. Dr. Spinks had found it of the greatest service, when a suction plate could not be worn because of paralysis. Also in another case where a patient had been debarred from his greatest pleasure, flute-playing, for nineteen years, while wearing a suction plate; but who, with the "Anchor plate," found himself able to play the flute with the same ease, as when he had his natural teeth.

At the morning session of the third day, some amusing inci-

dents of office practice were related by Drs. Westmoreland, Walker, and others.

Drs. Spinks and Dillehay gave the details of a serious case of Necrosis following the extraction of a tooth, which led to a very full discussion of the treatment of Necrosis.

Prof. Peabody said that it was difficult to state the cause of Necrosis unless the patient knew of some direct injury. In case of depraved blood, impoverished pabulum, a very slight injury might be followed by most serious results. He was very pronounced in favoring a surgical operation, cutting well beyond the diseased parts, for the thorough removal of every portion of infected tissues. When vitalized tissue is reached, the mouths of the vessels are open and pabulum will flow in. He would always leave a ring of gum tissue around the necks of loose teeth, leaving them in place if possible even when removing the septi and alveolar process, the periosteum of live bone should always be preserved; sub-periosteal bone—the sub-osteoblasts—being the great source of osteo genesis. Bibulous paper folded many times and packed in the wound will prevent infiltration of the buccal fluids and prevent septic irritation. A cure is the result of thorough manipulation, and the maintenance of aseptic conditions. He said that in the case of pyorrhea alveolis, the margins of the sockets were always necrosed and should be removed to hasten absorption; otherwise we would have to wait for the solution of the dead portions. Absorption would be much slower, though it would eventually be greater.

Dr. Clement wonders that we do not have more cases of Necrosis, for every time we extract a tooth we open into cancellous structure, and there are from nineteen to twenty-two varieties of micro-organisms ready to infiltrate into the cavity. He would resort to surgical operation if the disease had invaded the cancellous portions between the inner and the external plates of the maxillary; but would rely on medication with aromatic sulphuric acid, if only the margins of the alveolus were affected.

A thorough operation, with dissection of all the soft tissues demands a thorough knowledge of the anatomy of the parts, but if we know where the nerves and blood vessels are located, we can avoid them and operate safely.

Dr. Freeman, on the other hand, thought the brave, wise and judicious man was he who knew how to keep his hands off, and let nature do her work properly, watching the tendency of the pathology of the condition, whether towards degeneracy or regeneration. If the latter wait and only assist nature, she will rally to the performance of her functions. There is always a question in heroic surgery if we have gone far enough. If we had waited we would not have added fuel to the flames. We open up a new field for the infiltration of bacteria, and enlarge the scope of their devastations. If we have patience to wait, in a large number of cases nature's benign influence will work a cure, and we will not be forced into these bloody operations of surgery. Use the proper precautions to "fight the bugs" and nature will work the cure.

The several advantages of dilute pure sulphuric acid, and aromatic sulphuric acid were discussed at length. Dr. Freeman advocating dilute sulphuric acid as taught by Dr. Wm. H. Atkinson, spices having no agency in reproducing bone tissues, or in getting rid of dead bone.

Dr. Peabody urged the tonic effects of the spices added in the aromatic preparation.

Dr. Clement also favoring the latter for its stimulating action.

Dr. Vaughn being appealed to, gave it as his opinion that the spices were added simply to obtund the pain caused by the pure acid, and to make it more acceptable.

The subject being passed, Dr. R. K. Luckie, member of the State Committee, addressed the Association on the subject of the Dental Congress of the World's Columbian Exposition, reading the suggestions as to lines of work offered by Dr. Taft, Chairman of the General Committee of Conference. He set forth very clearly the objects and aims of the Dental Congress, and urged upon each and all the duty of contributing to the funds of information desired in compiling a history of dentistry throughout the world.

Dr. Peabody, of Kentucky State Committee, and Dr. Freeman, of the Tennessee State Committee, seconded the address of Dr. Luckie.

There being no more papers, and no other business, the election of officers was held, with the following result:

Dr. A. A. Dillehay, Meridian, President.

Dr. A. A. Wofford, Columbus, First Vice President.

Dr. L. G. Nisbit, Aberdeen, Second Vice President.

Dr. W. T. Allen, Amory, Third Vice President.

Dr. W. E. Walker, Bay St. Louis, Recording Secretary.

Dr. Frank H. Smith, Grenada, Corresponding Secretary.

Dr. C. C. Crowder, Kosciusko, Treasurer.

Jackson was selected as the next place of meeting, carrying it by one vote over Pass Christian on the gulf coast.

The Dental Law as recently amended, provides for the meeting of the State Board of Dental Examiners at Jackson, the first week in April. That date was accordingly fixed for the meeting of the Association.

The usual Resolutions of thanks were passed, bills paid, the officers elect installed in office, and on motion the Association adjourned to meet in Jackson, Wednesday after the first Tuesday in April, 1893.

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### A Pointer.

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Dr. L. V. Grubbs, of Topeka, was called by the court to make an examination of a case in a criminal suit and testify in the case. The doctor asked the court to excuse him because of urgent professional engagements. The court refused the request. The doctor then demanded an expert fee, saying that his time and professional knowledge was his capital. The court refused to comply with the demand. The doctor then said, "I have never examined or seen the case and know nothing about it, and I now demand an expert fee in advance for rendering this service—for obtaining information for the court which requires my time and professional knowledge." The court then ruled that the doctor could not be compelled to render such service without being paid in advance on his demand. There was no money put up, and the doctor was excused.—*Kansas Medical Journal*.

## COMMUNICATIONS.

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### **The Diagnosis of Chancre.—Prognosis of Treatment.**

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BY C. G. DARLING, M. D.

Clinical Lecturer on Oral Pathology and Surgery in the College of  
Dental Surgery.

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It is a matter of great importance to your patient that no mistake is made in the diagnosis of the initial lesion; this while commonly easy is sometimes difficult, you may see the chancre in an early stage of development, when the corresponding lymphatics are not enlarged to any appreciable degree; an innocent looking chancre may be the forerunner of a most malignant form of syphilis, a pin scratch may look far more dangerous than the lesion present, but the mistake usually made is, that the abrasion is an innocent sore, and will soon pass away. The lesion rapidly assumes its characteristic form, the friends which accompany it on its course make their appearance. The base of the primary sore begins to harden and the neighboring lymphatics become enlarged. All other signs may be delusive, but the peculiar hardness of the base is a certain sign to one familiar with the disease, and he rarely makes a mistake in diagnosis. You will carefully watch the course of the suspected lesion for about two weeks when you will find the glands associated with it are enlarged.

You must distinguish chancre from ordinary fissure of the lip, from herpes and epithelioma, the time and course of formation will be a great aid in diagnosis, with fissure there is no induration or enlargement of glands, while herpes rarely comes as a single sore, epithelioma is far more painful and the induration of neighboring glands does not begin until the disease is far advanced. Epithelioma is a disease of advanced age, syphilis appears in early life.

#### PROGNOSIS.

Chancre is not a serious lesion, unless complicated. When situated on the tongue there may be pain and difficulty in masti-

cation. Ory quotes the case of a young girl with chancre on the upper lip, which became phagedenic, destroying a large portion of the lip; she had repeated hemorrhages, and it was only by the greatest care that her life was saved. Young persons who are well nourished and free from hereditary taint have little to fear if the lesion can be kept aseptic. The early excision of chancre has of late been recommended as good treatment when the lesion is so located that the expedient can be adopted. I can conceive of no more favorable location for carrying out this treatment, than in chancre of the lip; not only may the danger of general infection be lessened but the danger of transmitting the disease to others is for a time removed. Peroni claims to have destroyed the initial lesion by electrolysis, successfully aborting twenty-one out of twenty-nine cases. The treatment was applied before the glands became enlarged, or within seven days after the appearance of the sore. De Ehlers found while employing this treatment that the course while not always aborted was far less malignant. He strongly favors early excision. If there is a bacillus of syphilis I see no reason why we might not, by excision, expect to limit the dosage of the virus if not entirely destroy it; the wound usually tends to heal, leaving but a small cicatrix behind. When the lesion is in a locality that will not admit of excision, as within the mouth or on the tongue, it may be treated by using non-irritating antiseptic washes.

The enlarged lymphatics which accompany chancre need no special treatment, they are painless, not being noticed by the patient until his attention is called to them. This condition disappears after three or four weeks by resolutions, though like the induration of chancre, they may remain enlarged for six or eight months, rarely do the glands tend to suppurate unless they have been injured.

#### THE SECONDARY STAGE OF SYPHILIS.

This stage is marked by constitutional changes and cutaneous lesions, there is usually fever, headache, pains in the muscles and joints, neuralgia, insomnia, etc., in the beginning of the secondary stage. Syphilitic fever, however slight, plays an important part in the history of the case; it begins about fifty to seventy days

after infection, or three to five weeks after the appearance of the chancre, it is usually preceded by headache and chill, it may so closely resemble intermittent fever as to be mistaken for it, and, while the course of the fever may be quite severe, the functions of the body are but little disturbed; it pursues no definite course, but the prolonged types are frequently followed by severe general lesions. Quinine has no influence on its course, but it yields readily to the proper use of mercury. Neuralgic pains may be felt in various parts of the body, but frequently come in the frontal and supraorbital branches of the facial nerve, it is usually worse at night. The lingual, auricular, mastoid and great occipital, are the nerves of the head most frequently involved. Neuralgia may for a long time be the only recognized lesion of syphilis, hence it is always well to employ mercury in the treatment of stubborn and mysterious forms of neuralgia, the headache of early syphilis is deepseated; it may be in the frontal, temporal, or occipital portion, and may be severe enough to cause loss of sleep or prevent mental occupation. The skin and mucous membrane are easily irritated, wounds and scratches do not heal readily, the sense of touch of heat and cold may be impaired or entirely lost, this condition may be restricted to certain portions of the body, as a portion where the sensation depends on the activity of a certain nerve, or it may extend over the whole body. These conditions are rare, but may last several months, and are most common to the cheeks and mammary region.

#### SKIN LESIONS.

The various eruptions which appear on the skin are called syphilides or syphilodermata, and are caused by cell infiltration, and localized hyperæmia, they possess certain characteristics which serve to distinguish them from other affections of the skin. It is a common condition to find several varieties of skin lesions present at the same time, some will be erythematous, simple, red, non-elevated patches of various size and shape, others will be vesicular, some will be moist, while others are dry and scaly, at other times they may be quite uniform in character. Their very peculiar color attracts the attention of the observer, this assumes a particular shade according to the age and stage of

their existence, at first they are pinkish red, but gradually fade to brownish red, precisely the shade of lean ham. The copper color is peculiar to those lesions which appear on the face, while the pink shades appear where the body is covered, particularly on the extremities, these changes in color are probably due to deposit of the coloring of the blood in the spots affected. There may be relapses after the spots have wholly or in part disappeared. The peculiar rounded form or arrangement of the eruption is of great importance in diagnosis, especially when it is quite persistent. Skin and mucous lesions are generally round when found alone, and when many are present at the same time, they may assume a crescent form or a part of a circle; this circumstance alone does not determine the nature of the disease, but is a valuable aid to diagnosis when the case is obscure. It is characteristic of these eruptions to be indolent, and they may remain weeks or months without any change. They may be without sensation, no itching except at that time when the eruption makes its first appearance.

#### SYPHILITIC ERYTHEMA.

This is the earliest and most common of all the syphilitic skin lesions, it is said to exist in all cases, though in some instances so mild as to escape observation, because it is confined to the parts of the body which are covered by the clothing, it makes its appearance about the sixth or eighth week after the development of the chancre, but may come much later if its appearance has been retarded by the administration of mercury.

Syphilitic Erythema, appears in small oval spots, they may also be irregular, from a line to half an inch in diameter, sometimes a number of these will run together and form a patch. When the lesions first make their appearance, they are of a pale rose color, but may change to red or purple, the cause of this change is due to hyperæmia, the skin capillaries being engorged with blood. In some cases there is only slight mottling of the skin which rapidly disappears; exposure to cold or undressing in a cool room will bring the spots out distinctly.

The eruption usually appears first on the abdomen, chest and back, it is rarely observed on the face, but may persist for a long time

on the hands and the soles of the feet, when they are invaded. No other skin lesion is of such diagnostic value as this, when it appears in the palms of the hands; here the lesions soon begin to form scales, which are continuously thrown off for some time. The same is true of the lesions appearing on the face, because these parts of the body are exposed. Other lesions may come with the eruption, the hair may fall out, the nails become dry and scaly, and the eye may be subject to inflammatory conditions. Superficial ulceration may take place, where the surfaces of the skin rub together, and from it may be found a foul secretion.

The course of erythematous lesions is slow; when once fully developed it may remain unchanged for a long time, its persistence depends upon the degree of hyperæmia present and the treatment employed. Relapses are common and it may become a mixed eruption, however, it gradually disappears, pigmentation left by hyperæmia is gradually absorbed, and the time comes when the skin shows no trace of the former lesions. This eruption may be mistaken for measles, scarlatina, or that produced by the administration of certain drugs, as cubebs, sandalwood, and mercury. The history will generally make this clear, the eruptions of measles and scarlet fever are fleeting, and accompanied by more fever than usually attends syphilitic eruptions.

#### PAPULAR SYPHILIDES.

Usually small and conical; they may appear in groups or singly. When the hand is passed over them, slight elevations are felt, the summits of which, become covered with minute scales. When they first appear they are bright red, then change to a dusky color, this change being characteristic of nearly all syphilitic eruptions. This form of eruption makes its appearance about the third or fourth month of infection, is chronic, obstinate in its course, and subject to relapses. There are large papular syphilides, which begin as small spots and rapidly increase in size until they may be an inch in diameter, they are scaly, elevated, and well defined, changing in time from a red to a coppery hue, they are chronic in their course and do not readily disappear, their favorite location is about the mouth or nape of the neck, this is a

common syphilitic skin lesion, occurring at any stage of the disease, but usually seen just before or just after the general eruption. Once formed they may remain for weeks, but yield readily to treatment. In their course they may become moist papules, either upon the general surface of the skin or about the mouth; a thin crust is formed by the accumulation and drying of the moisture, which is thrown off as scales or remains as a scab, under which healing takes place, the scab drops off leaving a large coppery-colored scar. When situated in a locality where there is much irritation by surfaces rubbing together the discharge is muco-pus, and of a disgusting odor.

Another variety of the moist papular syphilide occurs frequently just within the mouth, they may also be seen between the folds of the fingers, where they take the form of fissures. There is a squamous or scaly form appearing on the hands and feet, occasionally on the face, which is of great value in diagnosis, and is very persistent, it may appear at any stage of the disease after the general eruption. There is no itching or pain and the proper treatment rapidly limits its course. When first seen the papules are elevated, sharply defined, deep red in color; after a time these well defined elevations tend to run together forming a general scaly surface, which may thicken, crack, and persist if no treatment is used; the disease may extend even to the nails making them brittle and thickened.

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ESSENCE OF CASSIA AS AN ANTISEPTIC.—Dr. Black, *La Semaine Medicale*, No. 59, 1891, has found the essence of Chinese cassia a powerful antiseptic, even in a 1 : 4,000 solution.

It is superior to boric and carbolic acid; it is not irritating, and has an agreeable odor. It may be used with advantage as an antiseptic in surgical and gynecological practice, and as an emulsion, dissolved in distilled water, or mixed with boric acid. For concentrated solutions use a concentrated solution in cinnamon water.

## Some of the Results of the Early Extraction of the Sixth Year Molar.

BY W. B. CONNER, D. D. S., AKRON, O.

Read before the Northern Ohio Dental Society, Cleveland, May 1892.

Mr. President and Members of the Northern Ohio Dental Association: In the presentation of this paper, it will be my aim and purpose to show some of the changes that take place following the extraction of the sixth year molar during the developmental age of the maxilla and teeth.

I have no doubt there are some here who regard this subject threadbare, it may be however, but only in spots, for there are interesting facts to every question, if only pointed out.

During the development of the bones of the face and maxilla we are many times called upon to perform the disagreeable task of removing this enfeebled member, and our consciences often rebel at the thought, knowing what results will follow. Nevertheless with all our entreaties and kind solicitations, we are often obliged to extract the same, charging impatience and obstinacy to the patient or parent. Again where we have the confidence and willingness on the part of the patient, and retention is possible, some dentists are so wavering or vacillating as to what theory is best to pursue, they will reluctantly set aside their own judgment and be carried away by this or that author's vaunted or radical idea, and in the course of time bewail their folly.

The maxillary bones are unlike other bones in the body, in many respects, but are subject to the same laws of nature governing repair.

An excision or fracture of a shaft bone will not unite without producing a shortening. The same rule applies to all bones and flesh wounds. Also that destruction is always greatest in the direction of the least resistance.

It is popularly supposed that after this tooth has been extracted, that the second molar moves forward, and occupies its place. This is not altogether true, and here is where a mistaken theory

has been misleading. In every case of early extraction of the first permanent molar the change that takes place in the jaws is contrary to the popular theory advocated.

There is no force brought to bear upon a second molar that would cause it to move forward. The second molar is held in its normal position by its antagonist, and does not move forward, instead, the change is wholly anterior to the same, and comprises a retrograde movement of the jaw.

The roots of the sixth year molar penetrate the true maxilla to about one half their entire length; where extraction is resorted to, the lesion involves not only the process, but far into the jaw proper.

We have exactly the same condition as we would find in a shaft bone where fracture has taken place, only in a less degree.

What would be the result if a fracture of a shaft bone were not supported by splints during the knitting together of the parts? Would not muscular contraction distort that joint, and produce an unsightly and impaired member?

If the rule applies to one should it not also to the other?

The part of the jaw implicated in extraction is consequently weakened, and at an early age when the bones are yielding, is much more susceptible to the pressure of muscles than at a more mature age.

The strongest and most unyielding part of the jaws, both upper and lower are posterior to the second bicuspid, but owing to the extent of bone involved in the extraction of this molar it is made the weakest, and the muscular pressure brought to bear upon the anterior portion of the jaw, forces the superior jaw backward and upward, and the lower jaw backward and downward.

The model of the upper jaw before you, illustrates better than I can the result of the force mentioned.

The bicuspid, canines and incisors, have not separated in their movement backward, but you will observe that after the bicuspid lost their antagonism they were forced inward by muscular contraction.

I do not wish to convey the idea that such changes take place after the fifteenth year, but have made these observations where extraction has occurred prior to that time.

If the first molar is extracted before the second molar has erupted, we find the space closing up sooner, and to all appearances there has not been any retrograde movement on the part of the anterior teeth. But upon examination of the bite and jaws, we find a change, and a change not entirely at the expense of the jaw posterior to the lesion.

It has been taught in our colleges and journals, that we must expect the second molar to occupy the space left vacant, and our natural conclusion has been in harmony with these teachings.

It is contrary to all scientific reasoning to expect such a result, where extraction takes place at an age when the jaws are so yielding to the forces brought to bear upon them.

How often do we find a first molar moving forward to occupy the space left vacant after extracting the second bicuspid?

I have never observed one such instance. Is it not just as lame an argument to advance as that of a second molar moving forward to occupy the first molars space?

The models I have passed around are casts of my own mouth, showing the arrangement of the teeth and changes taken place.

You will readily see the absence of the first molars in both upper and lower jaws. The upper were extracted at about the tenth or eleventh year and the lower were left in the jaw until exfoliated, which was completed at the fifteenth or sixteenth year.

So the upper were lost before and the lower several years after the eruption of the second molars, bringing about the change presented.

We have in this case a decided shortening of the bite which is shown by the position of the occluding teeth, instead of an interlocking of the canines and bicuspid, which was the normal occlusion prior to the extraction. The superior canines and incisors are striking directly upon the incisive surfaces of the eight anterior lower teeth, proving conclusively a determined shortening of the bite.

There is also a loss of the use of six bicuspid, the four superior and two inferior.

I might say here that in all cases the lower jaw is not inter-

ferred with to near the extent of the upper, after extraction, owing no doubt to the fact that the inferior maxillary bone is ossified earlier in life and is of a stronger mold and texture offering more resistance.

I maintain that the superior maxillary in this case has been shortened to the extent of the width of the missing tooth extracted, not saying anything about the constriction in the width of the jaw.

The second inferior molar having erupted earlier than the superior, which is true in the majority of cases, gives it more prestige, having a firmer union with the jaw controlling the movement of its antagonist.

The result, you observe, holding the superior second molar in nearly its normal position, thereby prohibiting an anterior movement but not a rotary movement.

The forces brought to bear at this early age upon the superior teeth anterior to the first molar, might be regarded as insignificant.

We observe in our every day practice that the protrusions of the superior or inferior canines, if let alone, will in the course of a short time be adjusted to the arch and antagonistic teeth. The only force brought to bear is the weight of and contractions of the obicularis oris muscle with the assistance of the muscles of expression and mastication.

If the bones and process is so yielding at the time of the eruption of the canines, why should not the jaw be more so during the eruption of the second molars two years previous?

There is no doubt that if such changes as above mentioned come about at the age of twelve that the jaws have not become fully developed, and adhering to the law governing repair, the destruction is always greatest in the direction of the least resistance.

We have a retrograde movement in every case of early extraction of the sixth year molar.

In the superior maxillary the molar eminence adds its marked features to the face, its consequent absorption, its dire effect upon the stronger expression.

In every case of early extraction there is an entire loss of this protuberance and the muscles and surfaces over it become shortened and flattened with constriction of the face and in its vicinity.

There is a depression at the *alæ nasi* and a sunken condition of the bones, which occasionally extend to the floor of the orbit. In the face of all the abnormalities produced, we have our journals full of this or that theory relative to the time when this tooth should be extracted. One writer claims the eighth year, another the tenth, and another the eleventh or twelfth, and all for what purpose—to bring about a better arrangement and condition of the teeth and for the benefit of humanity in general.

I am safe in making the assertion that nature has not produced as many irregularities as the early extraction of the sixth year molar has occasioned.

Does extracting this tooth at an early age preclude all possibility of an overcrowded condition?

Can we foretell the size, development and exact arrangement of the teeth and jaws far into the future?

If such prophetic knowledge is possessed by a few, the whole profession should know it.

Nature's plan of eruption is a most harmonious one.

When the first molar is erupted it acts as an anchor or foundation to the arch, always in the proper place, well adapted for the purpose intended, and in the course of time the second molar erupts, reinforced, as it were, in accordance with the eternal fitness of things.

Now are we, as a scientific profession going to improve upon nature's plan by removing the foundation, and dictate our plan of constructing a human jaw?

We should have not only one object in view when extracting, giving room for incoming teeth and temporary relief. The best safeguard a dentist can have is to preserve, if possible, all of the sixth year molars until that condition has come about when the bones of the face have become perfectly developed and features set—the second molars, bicuspid and canines held in position by firm occlusion.

Then, and not until then, do I consider it prudent for the first permanent molar to be removed.

Everything is conjecture and visionary when we extract this tooth at an early age, with such delusions as some authors advocate.

Our observations, if closely applied, will not direct or advise such a procedure.

The intelligence of the age demands of us all that our knowledge can avail, and it does not show that we are advancing when we resort to such practice as we have been taught to follow in the past.

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### The Battle with Germs.

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BY JULIA W. CARPENTER, M.D., OF CINCINNATI.

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Read at the Meeting of the Ohio State Medical Society, May 4, 1892.

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Knowledge of the cause of infectious diseases is considered one of the achievements of the present day. Chemistry and the microscope, wielded by indefatigable energy, have brought to light some of the little things that confound the mighty. These microscopic travelers have been traced in their wanderings through the labyrinths of the human body and their manner of warfare studied.

It has been shown that when the micro-organisms enter the body those that are not cast out of the system, are attacked by the white blood corpuscles and other wandering cells called phagocytes. These cells take the parasites into their interior, where they are killed and disintegrated. The destruction of the bacteria in the cells is a *chemical* process. In fatal cases the bacteria poison the cells that engulf them; or when the infection is overwhelming, there is no battle at all, it is simply a surrender at sight.

Again it has been shown that fresh blood, serum, tissue juice, and saliva, have germicide properties, but not to an unlimited degree. The saliva will destroy the typhoid and cholera

bacillus if they are not too numerous. The diphtheria bacillus and pneumo-coccus are not veiled, but lose their virulence.

The destruction of the bacteria by the fluids of the body is also a chemical process. The first, called the phagocytic theory, and the second called the chemical theory do not conflict. The first is a chemical process inside the cell, the other a chemical process outside the cell, but the fluids of the body contain the secretions of cells.

These are the methods of the destruction of the germs in the body, but the reason why the cells win the battle in one case and lose it in another, cannot be demonstrated with our present microscopes and chemical tests. It depends on a yet unknown something, called for convenience vital force, of which some persons have more, some less. The highest degree of vital force which gives resistance to disease is called natural immunity. This is seen when many are exposed to a poison, as small-pox or diphtheria. All do not take the disease, some have the normal vital power that offers the necessary resistance. Living tissue in a healthy state can destroy septic bacteria. If this were not so every one would have tuberculosis, for no one escapes breathing, at some time, air full of the tubercle bacilli. It is when the vitality of the body is lowered that that certain something is wanting that can destroy micro-organisms. The vital force of the cells is the protecting power.

To prevent the inroads of infectious diseases there are only two ways, one pertaining to germs and one to the individuals. As to the germs, they must either be destroyed outside the body or forced to keep at a respectful distance. As to individuals they must cultivate the vital power that gives immunity. Can either of these things be done?

As to the first, are there any ways to destroy germs outside of the body available for every-day life for every one? What say the indefatigable workers in the field of bacteriology? They tell us that one of the most powerful destroyers of bacterial life is—*sunshine*. For instance, speaking of one of the most virulent of germs, the bacillus of anthrax, supposed to live in the soil, they say the anthrax spores are so tenacious of life, so resistant, that nothing in the soil can destroy them, only *sunshine on the surface*.

The little tubercle bacillus, a microscopic line, the dreadful scourge that carries off more than any other one disease, the little rod that calls together the learned from all parts of the earth in great convention, what statements do bacteriologists make about this monarch? The following: "The tubercle bacillus, very tenacious of life, is found alive after being buried long in the earth, or even after exposure to ordinary weather, but is killed after *long exposure to sunlight*." Are the rooms of consumptives flooded with sunlight for the protection of others, or is the sun shut out to save the carpet? The subject of sunshine as a germicide for every-day life has not been emphasized, but medicinal germicides have been advertised the world over.

Can vital force be cultivated? Without sunshine and fresh air, never. Sunshine, besides being antagonistic to germs, has a wonderful influence on the body, imparting the deficient vital power by a process as unknown as the vital force itself. The human body as well as the vegetable world utilizes sunlight. The whiteness of the plant grown in the cellar, and the green color of the same thing grown in the light, have their counterparts in human beings. Just what is the influence of sunlight on nutrition and nerve force we have no methods at present of estimating, but enough is known to induce physicians to warn people against shutting the sunlight out of their homes for the double reason that it gives vital force to the people and takes it away from germs.

Is the warning needed? Sunlight is shut out of every home as if it were the germs themselves. Take a drive through the suburbs of any city, a sunny winter morning when a little sun, a warm-hearted visitor, should receive a hearty welcome. Every window toward the sun is closed by shutters, shades and curtains, usually all three. If uncovered at all, a square foot is the most. Whether palace or hovel the sun is barred out in all alike. Please notice, if you have not already done so.

Plants with infallible instinct turn to the sun, man with fallible reason turns away from it.

Another forgotten requisite to vital power is fresh air. The best way to prove its necessity is to look at the effects of vitiated

air. The carbonic acid from the lungs and the emanations from the body soon make the air unfit to breathe. As it gets to this point it causes languor, headache, an oppressed feeling, and various uneasy sensations. An eminent physiologist very accurately says: "It is a wonderful fact that the body after a time adapts itself to such vitiated air and that one soon can breathe without apparent inconvenience, an atmosphere which, when one first entered it, felt intolerable. Such an adaptation, however, can only take place at the expense of a depression of all the vital functions, which must be injurious if long continued or often repeated." The proof of adaptation is well shown by the experiments of Claude Bernard. A sparrow is placed under a bell glass of such a size that it will live for three hours. If, at the end of the second hour (when it would have lived another hour) it be taken out and a fresh healthy sparrow put in, the fresh healthy sparrow will die instantly. The condition of the sparrow at the end of the first hour, is the state of most persons, and where is the resistance to invading bacteria?

There is a growing dread of air that is most remarkable. People are actually afraid of it. It shows itself on all sides. If a street car is packed, and one, near the door, opens it, it is as quickly closed by another; and until it is actual summer, if one opens a window, all frown and move away, as if it were a leper. Steam cars are no better. Returning in the early spring from a neighboring town, though the temperature was 55° F., each ventilator and window was closed and the stove red hot. As no one was nearer than five seats I ventured to open my window. In five minutes the conductor approached, saying, "I must shut the window, they are complaining of the air." With one window open in the whole car, a draught was not possible. A fish might as well be afraid of water as people of air.

Look at the latest luxury, so-called, in cars, the vestibule train, all closed up, so the whole train is like one long car. In the ordinary car there is now and then a puff of fresh air from the door, now it is a puff from the next car no fresher than your own. What is this atmosphere in which one is shut up for twenty-four hours? Was there ever a car filled with only

healthy people? The breath from the healthiest is refuse material, and to this is added the breath from some that have cattarrh, dyspepsia, imperfect teeth, incipient phthisis, and the breath from various other invalids traveling for health. Some smoke is also mixed with this, as the smoking room being small the door is usually open. Opening ones own window cannot destroy this mixture, and inhaling it twenty-four hours puts one's vitality at least as low as that of the sparrow at the end of the first hour, and resistance to the germs inhaled cannot be expected.

People often say they took cold traveling. They had an influenza from the germs they inhaled and could not resist.

What about ventilation at night? The exchange of carbonic acid and oxygen in the lungs is not the same during sleep as when awake. More oxygen is taken in during sleep and stored up for use the next day, but how many give themselves more air at night than in the day time?

A few months ago there was published in one of our journals a statement from some French physician as to a new treatment for phthisis which had brought about wonderfully good results. The new treatment was simply leaving the windows of the sleeping rooms partly open at night. This is amusing in the light of to-day, but as it is the national custom in France to keep all the windows closed at night for fear, as they say, of sore eyes, it is not so strange that he was amazed at the good effect of fresh air at night.

Physicians are by no means without blame in their example as to air. Many ride in close carriages shut up almost the same in sunshine as in storm. In their assembly rooms one might often suppose they were solving the problem as to how long they could breathe the same air over and over and the discussions still continue rational.

There are some physicians, however, in our city, who have the courage to use out-door air as an aid to treatment in some acute diseases, as pneumonia, and have all the windows open. Of course the result is good.

There ought to be a National Department of Health, and one of the chief duties should be to protect people as far as pos-

sible from all these so-called pathogenic organisms. And until people have the knowledge to protect themselves they should be protected by law. For instance, garments that have wiped up the unspeakable infectious dust of the streets should not be allowed in any church, theater, school, or any assembly room. Of course persons have the right to stir up such an atmosphere and breathe it if they wish, but they have no right to subject another to it. Dreadful mistakes are made from lack of knowledge. The law of absolute cleanliness holds good outside of surgery. The results of Listerism are needed in more than one department.

Architects should be taught the laws of health so they will not turn beautiful homes into hospitals. Whether they need this instruction or not, look at one house which is only a sample of many. There it stands alone in the center of a large lot, facing the east, so the whole length of the house has the southern exposure so poetically described by novelists. But what is there on this sunny, airy side of the house? All the halls and numerous closets. On the north, where there is no sun, are all the rooms and bay windows. Windows toward the east catch the morning sun, except those on the first floor. No ray of sunshine ever enters there. It is barred out by the porch with a roof so wide and slanting so low that the sun never stoops low enough to peep in. We speak of the coffin-lid crystals of the triple phosphates; the term might well be applied to this kind of a porch roof. If the house could be turned around, the north side on the south, it would be a model.

We have a fine government building occupying half a block. There are large windows, large corridors, but most of the work is done in the interior by gas light.

Architects are not taught that sunlight and fresh air are germicides, and opposed to phthisis, diphtheria, etc., and so they cannot be blamed. In the meantime, however, they go on making the windows smaller and smaller, and the third story of homes almost without the possibility of ventilation.

If the laws of nature cannot be changed, why not follow them? The foundation laws of health are as ignored as if they

were yet to be discovered. That sunlight and air are man's best friends, one little dreams. The life of to-day is a cultivated one contrary to nature. It brings about a lowered vitality and susceptibility to the so-called pathogenic micro-organisms, for germs cannot attack actively growing tissues, they cannot affect man unless the tissues have been previously injured.

If the normal vital force gives immunity from these infectious diseases, and its lack gives susceptibility, instead of saying some germs are pathogenic to man, would it not be more correct to say, it is *man* that is so often pathogenic and not the germs.

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### A Dental Law in the District of Columbia.

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For two years or more an effort has been put forth for securing a law regulating the practice of dentistry in the District of Columbia. The effort has been mainly on the part of a few dentists in Washington City. It is true they have had some help from outside, but the burden of the work has been upon their shoulders. Congress was very deliberate in the consideration and enactment of this law, but has at last passed a very good act; it is briefer than many of our State laws, but it embraces all the leading points that are now regarded as important for such a law. [ED.]

An Act for the regulation of the practice of dentistry in the District of Columbia, and for the protection of the people from empiricism in relation thereto.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That it shall be unlawful for any person to practice dentistry in the District of Columbia unless such person shall register with the health officer in compliance with the requirements hereinafter provided.*

SEC. 2. That a board to carry out the purposes of this act is hereby created, to be known as the board of dental examiners, to consist of five reputable dentists resident of and for three years last before appointment actively engaged in the practice of dentistry in the District of Columbia, to be appointed by the

Commissioners of said District for terms of five years and until their successors are appointed: *Provided*, That the first five appointments shall be made for terms of one, two, three, four, and five years, respectively. A majority of said board shall constitute a quorum. Vacancies occurring in said board shall be filled by appointment of eligible persons for unexpired terms.

SEC. 3. That it shall be the duty of the board of dental examiners, first, to organize by electing one of their number president and one secretary, to provide necessary books and blank forms, and publicly announce the requirements of this act and the time, place and means of complying with its provisions within thirty days from its passage; second, to promptly certify to the health officer for registration all who are engaged in the practice of dentistry in said district at the time of passage of this act who apply therefor; third, to test the fitness and pass upon the qualification of persons desiring to commence the practice of dentistry in said District after the passage of this act and certify to the health officer for registration such as prove, under examination in theory and practice of dentistry, qualified in the judgment of the board to practice dentistry in said District; fourth, to report immediately information of any violation of this act, and, annually, the transactions of the board to the Commissioners of the District of Columbia: *Provided*, That all graduates of dental colleges which require a three years' course of study shall be entitled to certificates upon payment of the certification fee and without examination as to their qualifications.

SEC. 4. That it shall be the duty of every person practicing dentistry in said District at the time of the passage of this act to make application to said board, in form prescribed by said board, for certification, and present the certificates thus obtained for registration to the health officer within sixty days from the passage of this act. Every such person so registering may continue to practice without incurring the penalties of this act.

SEC. 5. That persons desiring to commence the practice of dentistry in said District after the passage of this act shall first obtain a certificate of qualification from the board of dental

examiners, granted under authority conferred upon said board by section three of this act, and present the same to the health officer for registration.

SEC. 6. That it shall be the duty of the health officer to register all persons presenting certificates from said board in a book kept for this purpose, and indorse upon each certificate the fact and date of such registration.

SEC. 7. That certificates issued and indorsed under the provisions of this act shall be evidence of the right of the person to whom granted to practice under this act.

SEC. 8. That anyone who shall practice or attempt to practice dentistry in the said District without having complied with the provisions of this act shall be deemed guilty of a misdemeanor, and, upon conviction thereof, shall be fined not less than fifty nor more than two hundred dollars, and in default of payment of such fine shall be imprisoned not less than thirty nor more than ninety days, said fines, when collected to be paid into the Treasury of the United States, to the credit of the District of Columbia: *Provided*, That nothing in this act shall be construed to interfere with physicians in the discharge of their professional duties, nor with students pursuing a regular uninterrupted dental college course or in bona fide pupilage with a registered dentist.

SEC. 9. That to provide a fund to carry out and enforce the provisions of this act the board of dental examiners may charge such fees, not exceeding one dollar for each certificate and ten dollars for each examination, as will from time to time, in the opinion of said board, approved by said Commissioners, be necessary. From such fund all expenses shall be paid by the board: *Provided*, That such expense shall in no case exceed the balance of receipts.

Approved, June 6, 1892.

## PROCEEDINGS.

### Post-Graduate Dental Association.

The third annual meeting of the Post-Graduate Dental Association of the United States was held in Chicago, Friday and Saturday, April 29th and 30th.

The first day was devoted to clinics which were given at the Chicago College of Dental Surgery. These proved to be a very interesting part of the programme, and consisted of:

Experiments with anæsthetics upon the lower animals. Dr. W. C. Barrett, of Buffalo, N. Y. Dr. Barrett held the attention of a large number of the members for several hours. His demonstrations of the actions of nitrous oxide were especially interesting.

Dr. James A. Swasey, of Chicago, inserted a gold inlay filling in an incredibly short space of time. In the words of the Doctor, "It is worth something to know how to do this in order that we may save time and pain and discomfort for our patients."

One of the features of the day was the exhibition of regulating appliances by Dr. Angle, of Minneapolis, Minn. All his well known appliances, together with many new ones, were shown with explanations and demonstrations regarding their construction. It is surprising how simple and easy it is to make many of these which at first thought seem complicated and difficult. The Doctor is indeed master of his specialty.

Dr. H. C. West, of Chicago, demonstrated his method of root filling.

Dr. J. A. Dunn, of Chicago, demonstrated his treatment of abscesses with fistulous opening, exhibiting special appliances.

In the evening a rousing meeting was held, to which a general invitation was extended to the dentists of Chicago. The speaker of the evening was Dr. W. C. Barrett, who entertained the meeting in his usual brilliant manner. He dwelt at some length upon the subject of home study, congratulating the Post-Graduate Dental Association upon the work it has been doing. The meet-

ing was also addressed by Drs. Brophy, Ottofy and Clifford, of Chicago, Drs. Angle and Martindale, of Minneapolis, Minn., and Dr. Owen, of Broadhead, Wis. In behalf of the management, Dr. Ottofy outlined in brief the course of home study as proposed, and which will be open early in the summer.

#### SECOND DAY.

The meeting was called to order at the Leland Hotel at 10 A. M.

The President presented his annual address, recapitulating the work that had been accomplished this year. While to those who had not been in intimate contact with the work little advancement might seem to have been made, yet it was shown that much important work had been done, that they were a long way in advance of last year, with a system of home study almost ready to put into operation, and that an earnest and widespread interest had been developed among many of the best dentists of the country as well as all along the rank and file generally.

Dr. Tuller made several suggestions for the future, which were discussed, among them a suggestion as to what part they would take in the Columbian Dental Congress next year, recognizing that owing to their youth and incomplete plans of work, they could not take any important part. The appointment of a committee to investigate and suggest plans, and ways and means was left to the President. The presentation of models, appliances and incidents of office practice gave rise to animated discussion, which brought out many new and valuable ideas.

Dr. Nicholson, of Wisconsin, presented a model of a very interesting and difficult case of irregularity which he had successfully handled.

Dr. Julian, of Indiana, presented a beautiful and difficult piece of crown and bridge-work.

Dr. Owen, of Wisconsin, illustrated a method he had used to correct a faulty occlusion, which was highly appreciated.

Dr. Tenney gave demonstrations of the most advantageous positions to occupy in performing difficult operations.

Dr. Ottofy followed in the same strain, demonstrating the many advantages of a position at the left of the chair. But it

was observed that Dr. Ottofy had the special advantage in such cases in that he could use his left hand with almost equal facility with the right.

Dr. Tuller claimed that this could be attained by almost anyone, particularly the young student, if diligent efforts were made, and thought our colleges and teachers should impress and even enforce it upon students, insisting that in many operations the handling of instruments should be done with the left as well as the right hand, making them thereby better manipulators and more skillful dentists.

Dr. Fahr, of Wisconsin, presented diagrams and models showing a method he had adopted in restoring abraded molars, employing screw anchorages and building up with platinum and gold.

The meeting this year was called two months earlier than last to correspond with the change made by the Chicago College of Dental Surgery in holding its practitioners' course, and as the charter, as adopted at the last meeting, does not permit the election of officers until the end of the year, this order of business was suspended and the meeting adjourned, subject to the call of the President and Secretary. A meeting will probably be called during the latter part of June.

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### Burns.

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The following is an excellent dressing for burns:

|   |                  |   |   |   |       |
|---|------------------|---|---|---|-------|
| R | Campho-Phenique, | - | - | - | 1 oz. |
|   | Lanolin,         |   |   |   |       |
|   | Ung. aquæ rosæ,  | - | - | - | 1 oz. |

M.

Sig. Apply two or three times a day.—*Weekly Medical Review*, March 12, 1892.

## NOTICES OF DENTAL MEETINGS.

### **Pennsylvania and New Jersey State Societies.**

A joint meeting of the Dental Societies of Pennsylvania and New Jersey will be held at Cresson Springs, Pa., beginning on Wednesday evening, July 20, 1892, and continuing for three days.

Papers and essays will be read by prominent members of the profession, and the clinics will be of the most varied character embracing every phase of prosthetic and mechanical dentistry.

It is the desire and expectation of the committee in charge of exhibits to have a very large display of instruments, appliances, etc., in fact, everything that relates to the workings of operative and mechanical dentistry. This exhibit will, without doubt, be the means of introducing many new and important features pertaining to the profession, which will be beneficial to all.

It is designed to make this meeting of the two societies one of most memorable ever held in the Middle States.

A cordial invitation is extended to all members of the profession to be present.

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### **National Association of Dental Faculties.**

The ninth annual meeting of the National Association of Dental Faculties will be held at Niagara Falls, commencing on Monday, August 1st, 1892, at 10 o'clock A. M.

Each delegate must be a member of the faculty of the school he represents, and be provided with the proper credentials.

W. H. EAMES, Pres.

J. D. PATTERSON, Sec'y.

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### **American Dental Association.**

The thirty-second annual session of the American Dental Association will be held at Niagara Falls, N. Y., commencing at 10 o'clock A. M., Tuesday, August 2, 1892.

GEO. H. CUSHING, Rec. Sec'y.

### **South Carolina State Dental Association.**

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The Twenty-second Annual Meeting of the South Carolina State Dental Association will be held at Rock Hill, S. C., commencing on Tuesday, July 12th, 1892, at 10 A. M.

The Clinics will be a specially interesting feature of the meeting. A number of patients for these Clinics have been secured, and dental chairs will be provided.

A cordial invitation is extended to all members of the profession to attend this meeting.

Information regarding reduced rates on railroads, and at the hotels, will be furnished by the Committee on Arrangements.

The State Board of Dental Examiners will meet at the same time and place.

B. RUTLEDGE, D. D. S., Secretary.

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### **California State Dental Association.**

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THE twenty-third annual session of the California State Dental Association will be held in San Francisco, Cal., on Tuesday, July 19th, at 10 A. M., and continue four days.

It is expected that this will be a very interesting and instructive meeting. Members of the dental profession are cordially invited to attend.

THOMAS MORFFEY, President.

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### **National Association of Dental Examiners.**

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The annual meeting of the National Association of Dental Examiners will be held at Niagara Falls, Monday, August 1, 1892, at ten (10) A. M. All State Boards are invited.

FRED. A. LEVY, Sec'y.

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THE WOMAN'S Pharmaceutical Association of Illinois is planning to conduct a model pharmacy in the Illinois building at the World's Fair.

## EDITORIAL.

### About Dental Colleges.

There is, perhaps, no subject of greater interest to the progressive dentists of our country than that of the education of those who propose to enter its ranks in the future. The method of the education of dentists is very different from that of comparatively a few years ago. About fifty years ago the only method of attaining a knowledge of dentistry was by means of private pupilage. This, in some instances, when directed by and under the supervision of preceptors who realized their responsibility, brought forth good results. These, however, were few compared with the whole. The rule was that the education of the dentist, till within comparatively a few years, was a very meagre affair indeed, and pertained only to practical matters; the science of the profession was wholly passed over. Now, however, the matter is wholly changed—the rule is a special college training, as a preparation for entering upon dental practice. This change has increased the demand for educational facilities, and on that account, in part at least, the number of dental colleges has been rapidly increasing for the last few years; and in that matter there seems to be, as yet, no dropping off in organizing colleges. Anything like a thorough knowledge of college work and of what is being done in an educational way is very manifest to one who thinks upon the subject. Information is usually obtainable through the annual announcements of the various colleges as to their future work, but to these not much attention is usually given, except, perhaps, by those who propose to be students in the various colleges, and they are more concerned about the future than the past.

While thinking upon this subject somewhat, we have decided to refer to a few of the colleges; perhaps, we may speak of others in the future. First, of the American College, of Chicago.

This institution, in some respects, has had a prosperous career during the last six years, especially in reference to the number

of students in attendance. In some particulars of its management, however, its course was regarded as deviating widely from the requirements established by the National Association of Dental Faculties, and upon a pretty thorough investigation held at the last meeting of this body, the American College was suspended from membership in that organization. That action also placed it under the ban of the National Association of Boards of Dental Examiners. This constitutes an embarrassment that no college can afford to stand beneath. This action placed it in a very unfavorable light before the profession, and as a result its classes were greatly reduced during the last year. So serious did the matter seem to the management, that they were willing for any change that would relieve them of the difficulty, and, if possible, put the institution upon a more favorable basis. With a view to this consummation the entire management has been changed, those who have had charge of its affairs have disposed of their interest and withdrawn; a new faculty has been organized and a different management inaugurated.

The faculty now consists of Dr. John S. Marshall, M.D., Dean; Drs. L. C. Ingersoll, R. F. Ludwig, E. L. Clifford, I. B. Crissman, B. J. Cigrand, Vida A. Latham, Thomas G. Rix, H. B. Harrison, Weller Van Hook, Geo. Leininger, T. B. Wiggan, W. M. Tanquary, and H. D. Coghlan.

In addition to these there is a full corps of clinical demonstrators. The announcement states "that the financial management of the College has passed under the control of a syndicate of business and professional gentlemen, whose aim will be to make this institution one of the foremost in the land." There is evidently room for this institution, and the promise now seems to be, under the changed condition, that good work will be done by it.

Ohio seems to be coming to the front, during the last year and a half, in the establishment of dental colleges. Ohio had the first dental college in the West, and the second one in the world, and the wonder is, with her restless, progressive dental profession that she has rested so long with only one college, while some of her sister states have charters for fifteen or more dental colleges, and eight or ten in actual operation.

The first pronounced movement for the second dental college in Ohio was made about two years ago, in connection with the Homœopathic Hospital College, of Cleveland, O. That organization was effected a year ago, with Dr. W. H. Whitslar as Dean and Professor of Principles and Practice of Dental Science; Drs. Geo. H. Wilson, H. F. Harvey, L. P. Bethel, J. E. Robinson, S. B. Dewey, and I. E. Sampsell as teachers of the various branches. A regular session was held during the past year which gave a good degree of encouragement for the future. There were present fifteen matriculates; there were six graduates.

Some change has recently been made in the faculty by the resignation of Dr. W. H. Whitslar and Dr. Geo. H. Wilson. These vacancies have been filled, and preparations are being made for a still larger class during the coming year.

The withdrawal of Drs. Whitslar and Wilson from the college just referred to was that they might enter into a new organization which has, within the last three or four months, been effected. This is the Dental Department of the Western Reserve University, in Cleveland, Ohio. This is so far effected that the annual announcement for the session of '92-'93 has been issued. By that we see the special faculty consists of Charles F. Thwing, D.D., President; C. R. Butler, Dean, Dr. W. H. Whitslar, Secretary, Drs. Geo. H. Wilson, H. F. Harvey, D. R. Jennings, J. R. Owens, H. L. Ambler, and J. W. Van Doorn. This department is organized in connection with a very prosperous institution, one that has been well established for many years. The aim, as stated in the announcement, is to make a high standard of requirements in all particulars; and judging by the men who constitute the faculty there is scarcely a doubt as to the execution of the plan to the full.

In addition to this a new Dental Department is being organized at Columbus, O., in connection with a new medical school—The Ohio University Medical College. This is an institution, as we have been informed, with large resources, and will be able to plan and carry out large ideas. The dental department is being organized concurrently with the medical. Dr. A. F. Emminger is a member of the Board of Trustees of the medical

college, and has placed upon him the responsibility of organizing the dental faculty—by no means a minor matter. Dr. Emminger has already been assigned to the position of Dean of the Dental Faculty. Buildings are being erected for the use of the medical and dental departments; they will have the latest and most approved construction, and be adapted especially for the various lines of work to be done.

The dental department of the Cincinnati College of Medicine and Surgery, Cincinnati, O., was organized last year. It, like the others, is a department of a medical college. It held a session during the last year with thirty-four matriculates, and at the recent commencement had ten graduates. The special faculty consists of Drs. G. S. Junkerman, Dean; John M. Shaller, W. E. Lewis, A. I. F. Buxbaum, and W. T. McLean.

In the announcement it is said "that the aim of this school is to teach every department of dental surgery to completion." It is also said, "that this department will conform to all the rules and regulations, and all the requirements governing the National Association of Dental Faculties." It has a six months' session; three full courses are required for the degree of D.D.S. Indeed, the promise is on the part of all dental colleges recently organized, and those being organized, that they will conform fully to the requirements of the National Association of Dental Faculties, and we trust this will be done in good faith; and even if some or all of them should raise their standards higher than this it would be to their praise.

From a circular just at hand, we see that a dental department has been organized in connection with, and under the auspices of the University of Buffalo, New York. The organization is about completed, and a session will be held the coming Winter. This, like most new colleges of the day, proposes to take a high stand, and make very thorough work in its course of instruction. The principal men of the dental faculty are: Drs. W. C. Barrett, A. P. Southwick, Secretary; F. E. Howard, Herbert A. Birdsell, and J. Edward Line. Additional teachers will be added as may be required. This department will have ample accommodation, and all facilities for its work; this is one of the advan-

tages of dental colleges being allied with other and large institutions.

The organization of the department has occasioned some excitement and friction in the profession in Buffalo, the merits of which we do not care to discuss here, feeling well assured that if not already, there will be enough discussion upon the subject with the profession in Buffalo and vicinity. It is always better to keep a family disturbance within a household, as little good is ever accomplished by turning it loose upon a community; so, all we have to say in reference to that is—"Gentlemen, settle your little difficulty at home, you have nothing to gain by trying to get somebody else to do it."

Judging from the character of those engaged in this enterprise and from what is known of the University of Buffalo, we doubt not, this department will make for itself a good record.

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### World's Columbian Dental Congress.

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The suggestion has already been made by one or more persons that the time of the meeting of the Columbian Dental Congress, in Chicago, would be a very favorable and proper time for holding re-unions by the alumni of the various dental colleges of our country, as doubtless every college of any importance will have a large number of its alumni present at that time. We can hardly conceive of anything that would afford more pleasure to the graduates of the various colleges of the country than to make arrangements for such re-unions. Let the alumni of every college inaugurate the movement; this could be done by the officers—president and secretary—of any and every alumni association, addressing circulars to all those who are graduates of the respective colleges, selecting one or two from each class, they to correspond and interest the members of their respective classes and make such arrangements as might seem best to them to secure an interesting and entertaining time. An opportunity would thus be afforded for the alumni of different classes of each and every college to become acquainted with one another, and to renew old acquaintances. Class histories might be presented

that would be very interesting, indeed, many things could be done that would be entertaining and of real value.

The Dental Congress is to be held in a large hall, which has attached to it eighteen or twenty rooms, each of which would be large enough to accommodate from one to four hundred persons; and, we doubt not, arrangements could be made for the occupancy of these rooms for this purpose. Perhaps every college in the country has some of its alumni in Chicago who would act as local committees to make provision for the accommodation of their fellow graduates. The alumni of two or three colleges are now making arrangements for such re-unions, and it is very desirable that the sons of every college in the country should have the benefits of such a re-union. One day or a day and an evening could be well spent by such meetings.

In addition to these individual or college re-unions there could be a grand union meeting, for a day or an evening, of all the alumni of all colleges of the country. This, it is easy to conceive, might be made an exceedingly interesting occasion, indeed, these meetings could be made a very attractive feature of the Congress, though not a part of it nor under its guidance, they would nevertheless be interesting to all in attendance upon the Congress, and would, doubtless, embrace a large proportion of its membership. This much we will venture now, and, perhaps, will have something further upon the subject in the near future, after further consideration. We shall be glad to have an expression from all our brother editors throughout the country. Come, tell us what you think!

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### **The Southern Dental Association.**

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The annual meeting of the Southern Dental Association will be held at Lookout Mountain, Chattanooga, beginning July 26th, and continuing four days.

The indications are that this will be one of the largest and most interesting meetings of this body ever held. The point is a central one; and also a very inviting one, no more attractive place could have been selected than Lookout Mountain. The

temperature in summer is always pleasant, the atmosphere pure, and the scenery grand.

A most excellent programme has been prepared by the business committee for the occasion. The opportunity for good work by the Society is unprecedented, while the surroundings are of unmatched beauty, they are not of such a character as to draw the members away from the legitimate duties of the meeting; and the opportunities for social and professional intercourse will be all that could be desired. Ample provisions have been made for the comfort of the members and visiting dentists.

Arrangements have been made with all the railroads centering at Chattanooga for reduced rates, which will be upon the certificate plan. When purchasing a ticket at the starting point, procure a certificate upon which can be obtained return at one-third fare. Those going from Cincinnati and its neighboring towns will, of course, go via the Cincinnati Southern, this being the only direct road from Cincinnati to Chattanooga, and being one of the best roads of the country, and most perfectly equipped, makes a journey over it a real pleasure. It passes through the beautiful blue-grass region, and also through the Cumberland Mountains, the scenery of which must be seen to be appreciated. It is to be hoped that the journey over this road, and the attractions of Lookout Mountain, and the excellent meeting to be held, will be sufficient inducements for a large attendance from this part of the country. Trains over the Southern leave the Grand Central Station, Cincinnati, at 8 A. M., 11:30 A. M., and 8 P. M., each of which runs through in about twelve hours. We are assured that there will be a large attendance from all parts of the South.

At the same time and place the meeting of the General Executive Committee of the World's Columbian Dental Congress will be held. There will also be a meeting of several of the subcommittees, especially those of the Southern States, and altogether the occasion will be one of unusual interest and importance. It is to be hoped that all who can possibly do so will be present.

MEADVILLE, PA., May 5th, 1892.

At the 29th annual meeting of the Lake Erie Dental Association, which has closed to-day, the following resolution was unanimously adopted:

*Resolved*, That the manufacturers of porcelain teeth be requested to reduce the price of teeth in the same ratio to the decline in the price of platinum, that they made the advance on the price of teeth on account of the advanced price of platinum, and that we request the dental journals to publish this—a true copy.

C. D. ELLIOTT, Secretary.

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### American Dental Association. Oh! for Niagara!

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The regular annual meeting of the American Dental Association will be held at Niagara Falls, beginning Tuesday, August 2nd, and continuing four days.

This will be an occasion of very great interest to the profession generally, as many matters pertaining to the World's Columbian Dental Congress will be there considered, and perhaps call for important action. All the Sub-committees will be called together upon that occasion. The various State Committees will also be called together for consultation and devising plans of work.

The meeting of the National Association of Dental Faculties is also to be held at that time, and also the National Association of State Dental Examining Boards.

Railroads centering at Niagara will give, as we understand, reduced rates. Arrangements have been made for those going from or through Cincinnati, with Erie Lines, by which most excellent accommodations will be had. A Pullman buffet sleeper will be run through for the exclusive use of those going to the association, if a reasonable number will go. Very low rates are offered and a stop over at Chautauqua either going or coming, or both. A lake boat ride will be given all who desire it.

The time for returning can be arranged to suit those who desire to stop over.

This special car will leave Cincinnati C. H. & D. Station, Sunday, July 31st, at 5:55 p. m.

This is a delightful route, as all know who have traveled over the road.

Any further particulars desired, may be had by inquiry of the editor of the REGISTER, No. 122 West Seventh St., Cincinnati.

It is important that all who desire to go under this special arrangement should make it known to the editor of the REGISTER by July 25th.

# THE DENTAL REGISTER.

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## COMMUNICATIONS.

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### Syphilitic Disease of the Tongue.

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BY C. H. DARLING, M.D.

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The lesions in syphilis, which may appear upon the tongue, are quite distinct and confined to no period of the disease. It is rarely the seat of the primary lesion, because the accidental transmission of virus to this locality rarely happens. When found upon the tongue, it is near the tip. It is hard, circumscribed, and quite prominent, varying in size from a small pea to a large bean. The base is sloping and rounded, while the lymphatic glands beneath the jaw are hard and enlarged. The sore is quite superficial and free from pain; it differs little in color from the surrounding tissue, and has a slight watery discharge. The primary lesion pursues much the same course here that it does in other localities, unless it is irritated, then it becomes inflamed, the discharge increases, and its course is prolonged beyond the usual period.

The lesions of the secondary stage are far more common, and are of two kinds. Those which are formed by injury or breaking down of mucous patches, the others formed by breaking down of muscular and connective tissues, or by irritation by diseased teeth.

Tubercle of mucous membrane may be sometimes taken for syphilis, but may be recognized by the portions of tuberculous tissues remaining behind, not fully destroyed by ulceration.

Ulceration of the tongue will be limited in its course according to the constitutional condition of the patient, or the amount of irritation present. The ulcers not only increase in area but

become deeper. The deeper an ulcer becomes, the more clean cut will be the edges, and more unhealthy its appearance. The surrounding tissues may be thickened and no healthy granulations appear until treatment has been carried on for some time. Whatever may be the cause of these ulcers they show little tendency to inflammation. The inflammation is slight, indeed, when compared with ulcerative conditions in other than syphilitic persons. The second variety appears as small excoriations on the upper portion of the tongue, at the tip or edges. They will present no sign at first that they belong more to syphilis than to other constitutional diseases; there will be no inflammation, only one or two slight cracks or fissures. In all of these lesions syphilis may be looked upon as the predisposing cause, while irritation by the teeth is the exciting cause.

Ulcers of the secondary stage may remain a long time stationary as regards their growth, or they may slowly increase in size; they may remain for months the same, being neither better nor worse. Though not painful, they may be extremely sensitive; this together with the slight tendency toward recovery may cause the patient much uneasiness, and are constant reminders to the possessor that he has syphilis.

How can one determine that the ulcers on the tongue are due to syphilis? Sometimes this will be easy, at other times quite difficult. When the ulcer is formed by breaking down of tubercule, a portion of it remaining behind, the diagnosis is easy. In syphilis the skin lesions or enlarged, lymphatic glands may be present, at the same time, frequently there are lesions in other parts of the mouth; then there is the characteristic absence of pain and inflammation so common to syphilis. It must not be forgotten that disease of the teeth may cause similar lesions or may be an active cause in producing syphilitic lesions. Sometimes the diagnosis may be made rather by the absence of other diseases than by the presence of syphilis, no other disease presents such a variety of symptoms or is so obstinate and unyielding in its course. Healing of the ulcers of the secondary stage leaves scars on the tongue, not deep or extensive, but plainly visible; they are bright outlines which preserve with marked

distinctness, the shape of the ulcer as it previously existed; a written record of past syphilis to aid us in diagnosis.

As ulcers of the tertiary period of syphilis begin in gummata, it may be well to describe them as they form in the tongue. When first formed and unbroken gummata may be superficial or deep, appearing at any time in the third stage, but usually four or five years after the primary lesion. Superficial gummata are found on the dorsum, borders and tip of the tongue. They form hard points or nodes of various sizes from a pin point to a small bean, and may be felt as hard bodies beneath the mucous membrane. They are not always well defined, but fade away into the surrounding tissue. They are indolent at first, causing no pain. When first noticed they are slightly elevated above the mucous membrane. Soon this point becomes slightly reddened and the membranes get smoother than that surrounding the point of disease. They are nearly always multiple, and a large number of them may be found on the dorsum of the tongue at one time. Soon they may become redder, softer, and in the course of time they may break down, but in some cases they may remain unchanged for months according to the condition and habits of life of the patient. The deeper gummata remain unchanged longer than the superficial.

The diagnosis of gummata is not difficult. They may be situated on portions of the tongue not easily irritated, and show little tendency to break down, but when irritated ulceration begins early. A single gumma on the border of the tongue may be mistaken for carcinoma, but the age of the patient and previous history may make the matter clear. The deep gummata also vary much in size. They may be single, as large as a hazelnut, or there may be large gummatous masses, collections of smaller ones. They are more formidable than the superficial and more destructive in their tendencies. They are found in any part of the muscular portion of the tongue, but are most common near the median line. They may lie at almost any depth, and when lying deep are noticed only as a slight bulging of the surface of the tongue. They can be felt as rounded tumors, distinct in outline, feeling much like a foreign body in the substance

of the tongue. They are not sensitive to touch, are very indolent, sometimes remaining unchanged for years, though their natural tendency, like the superficial, is to break down and become ulcers. The mucous membrane covering them is usually smooth and normal in appearance, unless they are beginning to ulcerate. As the disease progresses the tumor becomes softer and approaches the surface. However, rapidly they may grow they retain their rounded or oval form, and as they approach the surface, fluctuation may be detected in some of the larger tumors.

When several gummata exist at the same time the tongue may be greatly swollen; instances are known where the tongue could not be kept in the mouth. Deep gummata may be mistaken for tumor, carcinoma or abscess. Innocent tumors are usually single; deep gummata multiple; innocent tumors are frequently lobulated—rare condition for gummata; or innocent tumors are clearly defined and separated from the muscular tissue of the tongue, while gummata are not.

Cancerous lumps are single, the result of irritation, and form opposite a carious tooth, while gumma may have no connection with diseased or broken teeth. Cancer comes after forty years of age; gumma may come at any age, and is usually attended by a history of syphilis; at least in all doubtful cases the history of syphilis should be carefully examined.

An abscess is more clearly defined than gumma, and diagnosis may be completed by passing an exploring needle into the tumor. Gumma may also be mistaken for a foreign body in the tongue if there has been a preceding history of injury. Unbroken gummata tend to get well if the patient is in fairly good health and the treatment is persistently carried out. When no treatment is employed they tend to form ulcers which pursue a varied course according to circumstances.

These ulcers are far more formidable than those belonging to the secondary stage. Deep fissures and extensive cicatrices form an enduring record of the disease, which may be read while the patient lives. There may be one large ulcer or there may be more, according to the number of gummata which break down.

They may be round, oval, or form deep lines or fissures. Superficial fissures may deepen and at the same time widen. They may be so numerous that they cause great deformity of the tongue. The ulcers may be well defined, sharp cut and perpendicular, or their borders may be undermined, the full extent of the fissure not being seen until the walls are separated. The surrounding parts may be swollen and slightly indurated, but free from pain. The fissures are often quite sensitive and interfere with mastication. Profuse salivation is frequently produced. They may become inflamed because of irritation, the large ones presenting quite a formidable appearance, yet they are ever chronic and indolent. When very deep there can be no mistake in diagnosis, a single fissure might be due to tubercule, but the furrowed tongue of old syphilitics is seen in no other disease.

The larger ones might be mistaken for cancerous ulcers, but ulcers of syphilitic origin have a great liking for the dorsum of the tongue, and that well back. They are more common in men than in women and may sometimes be found on the tongues of children who have inherited syphilis. There will be a history accompanying the condition, but no enlargement of the lymphatics.

Gummatous ulcers rarely heal spontaneously but may remain indolent for an indefinite period. They may also inflame, and extend in various directions, eating away a large portion of the tongue. The course they pursue will depend much on the general conditions of the patient as well as upon surroundings.

#### SYPHILIS IN THE MOUTH.

An early manifestation of the secondary stage of the disease will be the appearance of mucous patches in the mouth. They are rose-colored elevations rounded or oval in form, presenting a surface which much resembles mucous membrane.

You should be familiar with these lesions above all others, for in them lies great danger to yourselves of contracting the disease. Sometimes these patches may not be elevated, but slightly depressed. The surface may retain its epithelium, but that is generally lost. At some period they are greyish-white as though

penciled over with silver nitrate. This covering is not easily removed ; it may not cover the whole surface but remains along the border. They commonly appear at the angles of the mouth and may begin in cracks or fissures. The inner border of the lower lip is a favorite situation for these lesions, and there is no part of the mucous membrane of the mouth where they may not appear. When seated upon the tonsil they frequently ulcerate because of the constant friction in swallowing. Another point where they are frequently found is on the velum palati, the pillars of the fauces, and the inner side of the cheek near the last molar tooth. The gums are rarely affected.

These mucous patches are so large, superficial, so distinct in outline, so free from pain and irritation, that they need hardly be mistaken for any other disease than syphilis.

Erythema may be found in the mouth as well as upon the skin and is usually confined to the neighborhood of the fauces ; it may be so slight as to be mistaken for a slight cold. There may be some swelling of the velum and uvula at times causing it to hang far down, so that the question of removal will be raised. This should never be done as the parts soon tend to assume their normal condition, unless there be slight erosions which end in ulceration.

When papular eruptions are present on the body they may also be found in the mouth, but they are short lived, because the mucous membrane is very thin and tends to break down. The white patches found near the angles of the mouth are seen most in smokers and are due to the constant accumulation of epithelium. They may, in time, become erosions or fissures, are persistent and obstinate, liable to recur even after the specific virus has become extinct. Gummatus tumor of the soft palate comes on insidiously and frequently does a large amount of irreparable damage. The early symptoms are scarcely noticed. The patient may, at first, think he has an ordinary cold. There will be a slight tickling of the fauces followed by difficult deglutition. When he attempts to swallow he may find that the food regurgitates through the nostrils. Soon, and with little warning, he may be deprived of the power of speech, the full

round voice being changed to a nasal whisper. When he attempts to swallow the liquid portion will pass through the nose.

How is gumma of this locality formed? Between the buccal and nasal surfaces may be found a small, slightly-thickened growth seemingly composed of some deposit in the connective tissue. It has the appearance of flattened tumor, at first hard to the touch, but in time it begins to soften and fluctuates like a small abscess. Again, the infiltration may be diffuse, the whole velum is thickened, the mucous membrane becomes red and the mobility of the parts is much impaired.

The fluctuating tumor breaks or ulcerates through (it may be on one or both walls). When only one side breaks it is usually in the mouth, leaving a deep ulcerating cavity with sharply cut edges. The destructive process progresses rapidly, and complete perforation soon follows. The whole velum may in this way be soon destroyed, or only a limited portion be perforated. When there is marked destruction the voice is greatly changed, being nasal and of that pitch which the French term "duck's voice." The slight pain present in the early stages has now disappeared; swallowing is not difficult, but the food, even some of the solid portions, may come through the nose. Hearing may be impaired because of swelling and inflammation about the Eustachian tube. After a time the inflammation subsides and the tissues gradually resume their normal condition. Some of the tissue has been destroyed, hence a full recovery of the voice, or the power of conveying the food along the proper channel to the throat should not be expected. Much improvement may be effected by a properly constructed plate, such as you will find fully described in works on this subject.

Is there any difficulty in determining that ulceration of the palate belongs to syphilis? Such a result is likely to follow only two causes, syphilis and tuberculosis; the latter being a rarity when compared with the first. Treatment can do much toward limiting the destructive process of ulceration when it has once begun, and surgery may often aid in repairing the damages.

## Micro-Organisms of the Mouth.

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BY JO. H. LINSLEY, M.D.,

Prof. of Pathology and Bacteriology, Medical Department, University of Vermont, Pathologist to the New York Infant Asylum, etc.,  
Burlington, Vt.

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Read before the Vermont State Dental Society, March, 1892.

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I have many times had the misfortune to be obliged to seek the aid of members of your profession, and the treatment I have sometimes been subjected to by them, while very generally resulting in my benefit, was of a very intense and extractive nature.

I never anticipated being especially called upon to attempt an elucidation of any subject having a direct bearing on the details and operative work, incident to the practice of your profession, and even an intelligent discourse on the theme of which I speak to-day, would, but a very few short years ago, have been practically impossible and excited but little interest.

But when a representative of your society, four or five weeks ago, solicited of me a paper on "Bacteria of the Mouth," to be presented at the present session of your association, I consented to his proposition with pleasure, more especially as I had intended, shortly, to undertake some bacteriological investigations in this direction. I very much regret the limited amount of time I have had, in which to properly conduct many practical researches of some of the surprisingly numerous varieties of micro-organisms which either find their habitat in the oral cavity, or are simply resting strangers, or *lounge*rs, as I might say, in this locality. While I shall exhibit to you some flourishing so-called "pure cultures" of bacteria, whose ancestors were removed from carious teeth, inflamed gums, and improperly cleansed "*grinders*." I have, necessarily, been obliged to resort to the latest text-book on the subject, and to the various papers and articles which have recently appeared in medical and dental periodicals, both domestic and foreign, for the recognized varieties of germs infesting the mouth, their relatively respective frequency, etc.

To accomplish more than this, under the circumstances, was impossible, and the procuring of even the scanty material, which I shall present to you, exacted much more time and labor, than you might at first imagine.

It is an interesting fact in the history of bacteriology, that the first authenticated record and drawings of bacteria, were made from micro-organisms discovered in mucus from the human mouth by Leeuwenhoek, in 1683. From this time, until about 1860, but little progress was made in this subject, and the rapid strides, and the accumulation of important data accomplished in recent years, has been very largely due to the improvement and perfecting of optical instruments. The fortunate discovery, by Koch, and the use of artificial, solid, transparent food-media, was of scarcely secondary importance in the development of bacteriology,\* by facilitating the separation, culture, and examination of germs.

A brief description of the more common culture media used for separating and growing organisms of the mouth, together with the methods employed in obtaining pure cultures, will be of interest to those of you who are unfamiliar with the details of bacteriological investigations.

*Nutrient Gelatine.*—This is composed of beef-juice, or beef extract, to which is added from 5 per cent. to 20 per cent. of best French gelatine, 1-10 per cent. dried peptone, and 1-20 per cent. common salt. The reaction must be neutral, or very slightly alkaline. The addition of 1 per cent. to 2 per cent. of sugar improves the medium for the growth of mouth-bacteria.

This material is easily prepared,† and is largely employed, especially for plate or dish cultures. It is unfit for use in the incubator, as the gelatine is liquified at temperatures above 25° C. The characteristic growth of many bacteria is better exhibited on this substance than on the following.

*Nutrient Agar-agar.*—This is prepared ‡ similarly to the fore-

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\*“Micro-organisms of human mouth.”—MILLER.

† It can be obtained already prepared by Eimer & Amend, 265, etc., Third Ave., New York.

‡ This can also be bought of the same firm.

going, only that 1 per cent. to 2 per cent. of agar-agar is used, instead of the 5 per cent. to 20 per cent. of gelatine. (For detailed directions for the preparation of these media, reference to the text-books on Bacteriology is advised.)

*Boiled Potato.*—This is a very simple and valuable nutrient medium. Any sound potato can be used, excepting those which crack open, or become mealy, on boiling. The potato is carefully washed and scrubbed with a stiff brush (an ordinary nail-brush answers very well), and the “eyes,” and any unsound portions, removed; it is then soaked for one hour in a 1:1000 bichloride of mercury solution, and finally boiled in a steam sterilizer, or cooking “steamer,” for one-half or three-quarters of an hour. It is then placed in a moist chamber, or covered glass dish, which has been sterilized, and in the bottom of which has been placed a piece of filter, or blotting paper, slightly moistened with a 1:2000 bichloride sol.

If the proper precautions have been observed in their preparation, potatoes thus treated will remain germ free indefinitely, and can be used at any time at a moment's notice, for the planting of material from which cultures are desired. Many bacteria exhibit their most characteristic growth on this medium, and but few germs are known which refuse to exist on it.

Occasionally a micro-organism is met with which requires for its full development a different soil from any of the three media just enumerated. In such cases other substances are used, such as sterilized blood-serum, starch-paste, boiled hen's egg, etc.

Liquid media are also employed in the cultivation of micro-organisms generally, as well as those from the mouth, but more especially for studying the progress and phenomena of putrefaction, fermentation, decomposition, etc., occasioned by the action of bacteria. Such media are bread-juice, peptonized beef-bouillon (to which has been added 2 per cent. sugar, with, occasionally, the addition of starch), urine, milk, watery extracts of various plants or grains, juice of fruits, saliva (to which some nutritious substance has been added), etc.

Pure cultures are obtained by transferring a minute quantity of a “colony” from a glass plate, or Petri dish, on the end of a

sterilized platinum needle, to a tube of nutrient medium, where it is "planted," by either thrusting the needle directly through the center of the solidified culture medium in a test-tube, then twisting the needle a few times between the thumb and fingers, and carefully withdrawing same (the so-called "thrust," "puncture," or "stab" culture), or by drawing the point of the impregnated platinum needle, which has been slightly bent, across the *surface* of the medium, which has been allowed to solidify in the tube in an oblique direction (the so called "scratch," or "surface" culture.)

Considerable work and investigation in this line can be done by the practicing dentist, or physician, without investing in an expensive outfit; *at least* it is quite practical for any practitioner, who desires to determine the existence of any particular species of micro-organisms in certain cases, to *himself* inoculate a prepared tube of gelatine, or agar, with the suspected material, and send the same immediately to a bacteriologist for further treatment, examination, etc. The following is a procedure I have employed in the investigations of this subject, and is, as you will admit, exceedingly simple and quite satisfactory. I use the glass phials of various sizes, used by some wholesale drug houses for holding physicians' samples of pills, parvules, tablets, etc. These phials are sterilized, filled with from 1 to 2 ctm. with sterilized gelatine, or agar, and their mouths closed with the ordinary cotton-wool plug. When a patient comes under treatment, having a leison of the mouth, teeth, or gums, the bacteria of which it is desired to cultivate, the dentist sterilizes an excavator, by passing it back and forth through the flame of his spirit-lamp, or Bunsen burner, a few times, and carefully removes a bit of material from the mouth and pushes it just into the gelatine in the prepared bottle. The same day, at the first opportunity, this is sent to me, and dish-cultures, etc., are subsequently made from the specimen.

To review *all* the varieties of bacteria which have thus far been described and obtained (over 100 species) from the buccal cavity, with their individual peculiarities, etc., would require several papers, each fully as long as the present one. I shall,

therefore, confine myself to the consideration of a few of the more prominent and frequently occurring varieties, and afterward offer some comments, applicable, in a *general* way, to the subject.

It has been customary for many observers, to classify every thread-producing germ, which they find in the buccal cavity, as "*leptothrix buccalis*." This is to be deprecated, as there are several bacteria of the mouth which form threads.

The name "*leptothrix buccalis*" (like "*bacterium* terms"), designates no particular organism, possessing peculiar characteristics, and the name no more deserves to be retained than "*denticola*," "*Buhlmann's fibres*," etc.; the less so since it has always been the expression for an obscure and erroneous conception. Morphologically, as well as physiologically considered, *leptothrix buccalis* has been regarded as a veritable wonder. It has been said to perforate and split up teeth, its elements to cause all kinds of diseases in the oral cavity, to penetrate into the lungs, the stomach, and other parts of the body, and everywhere to manifest a destructive influence.

As absolutely nothing was known concerning the biology and pathogenesis of this organism, all sorts of wonderful properties were ascribed to it. It is therefore high time to banish this confusing name from bacteriological writings. (Miller.)

Miller suggests the name of *leptothrix inuominata* for those germs of thread-like growth, whose biology is too ill understood, to place their relation to other mouth-bacteria.

Let us, for a moment, consider what the inducements are which the mouth, as a whole, offers to wandering, homeless "bugs," that they so readily and promptly enter these premises, and not only obtain their own individual livelihood, but, uncereemoniously, at once proceed to increase the members of their households.

As pertinently stated by one observer,\* the mouth forms "a kind of hot-house, or forcing ground, for their cultivation." Dr. Bergtold† says: "If one could find a perfectly sterile

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\*Woodhead—"Bacteria and their Products," p. 337.

†"The Mouth as a Center of Infection," W. H. Bergtold, M. D., Dental Cosmos, Vol. 43, No. 2.

mouth, he could also see at once that the opportunities of seeding it, so to speak, are excellent, in that every individual is more or less constantly taking in air and also food and drink through that channel, and in both these actions receiving numberless spores and other forms which, later, give us growths of bacteria.

The organic and inorganic substances found in the mouth, which may serve as nutriment for micro-organisms, are the following\*:

1. Normal saliva;
2. Buccal mucus;
3. Dead epithelium;
4. Dental tissue softened by acids;
5. Exposed pulps;
6. Exudations of the gums, conditioned by the irritation of tartar, etc.;
7. Accumulation of particles of food.

The carbohydrates and albuminous substances furnish the greatest nutriment for bacteria in the mouth, and are almost constantly present there at all times. They are found between the teeth, in cavities in the teeth, and also upon their surface, and in any depressions.

Perfectly pure, mixed, human saliva has no toxic properties, and in those cases which have been reported by Pasteur, Valpian, Gautier and others, in which "unadulterated human saliva caused more or less morbid phenomena," it must be suspected that the samples used *were*, in some manner, contaminated.

Mixed with the various deposits of bacteria, etc., always present in the mouth, saliva may possess most energetic toxic properties, having many times proved fatal, even as abundantly proved by numerous recorded cases.

It is also probable that the saliva has far less antiseptic properties than is often ascribed to it, and the undisturbed growth of micro-organisms in the oral cavity, would seem to sufficiently support this view.

The diastatic action of the ptyalin of the saliva, in changing starch into a variety of sugar, variously termed dextrose, malt-

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\* "Micro-organisms of the Human Mouth," Miller, p. 37.

ose, or ptyalose, which, as soon as formed produces an excellent culture-medium for those germs concerned in the process of fermentation.

According to Miller,\* there are six different micro-organisms which are almost invariably present in every mouth. They are:

1. *Leptothrix innominata*. This occurs as thin, more or less zig-zag threads. Found in the soft white deposit on teeth in every mouth. Is stained faint yellow by a solution of iodine in iodide of potassium sol., slightly acidulated with lactic acid.

2. *Bacillus buccalis maximus*. Occurs as isolated bacilli, or threads, more often as "tufts of threads." Is the largest of mouth bacteria. Is stained brownish-blue more or less deeply, with the iodine solution.

3. *Leptothrix buccalis maxima*. This occurs as long, thick, straight or curved filaments, somewhat similar to bacillus buccalis maximus. Is found in the mucus deposit upon the teeth. Is not stained by the iodine sol.

4. *Jodococcus vaginatus*. Occurs singly or in chains of from four to ten cells. Chains have a sheath, and cells appear as flat disks, or as more rounded, even squares. Occurs in all unclean mouths. Not stained with the iodine sol.

5. *Spirillum sputigenum*. This is seen as rods, curved like commas, having very active, spiral movements. Found in all mouths, especially in unclean ones. Is the soft deposit on the margin of inflamed gums of dirty mouths. Stains more readily than the foregoing.

6. *Spirochaete dentium* (denticola). Found as spirals of very irregular windings and unequal thickness. It is found under the margins of the gums, when covered with a dirty deposit and slightly inflamed, or in other words, gingivitis marginalis.

There are a great many mouth bacteria proper, not invariably found in every mouth, which are uncultivable, and whose pathogenesis is unknown. Among them Miller found a bacterium of enormous dimensions, in the mouth of a dog suffering from pyor-

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\*"Micro-organisms of the Human Mouth," Miller, p. 69.

rhoea alveolaris, which he has called *leptothrix gigantea*. There are also three or four kinds of germs from the mouth which give a blue, or violet reaction with iodine, and from twenty to forty varieties which are cultivable, partly non-pathogenic, partly of unknown pathogenesis. The oral cavity is a favorite locality for many varieties of chromo-genic or color-producing bacteria. These are widely diffused in nature, and occur abundantly in water, in the air, and various places.

In the mouth they are less numerous than the colorless germs, and probably on account of this preponderance, the color is not visible when in this locality, but is readily developed during the culture of these micro-organisms on many of our culture media.

Among the colors produced by different species of mouth bacteria, Miller, gives a yellow, produced by at least eight kinds of bacteria: *green* (by 5), *red*, or *reddish* (by 3), *blue*, *black*, *brown*, *orange*, etc.

To study any of the bacteria, particles of matter containing them must be taken from the mouth, and mounted directly on cover-glasses, after which they may be examined fresh and unstained, or (after being carried through the flame of a Bunsen burner or spirit lamp *three times*) be stained and mounted permanently.

Many of the germs that have been found in the oral cavity are, of course, accidentally present, having been deposited just previous to an examination, which would only remain a short period.

The micro-organisms I have just mentioned, as being termed "Mouth Bacteria Proper" by Miller, are found in *all healthy* conditions of this cavity, but the variety and number is more or less greatly augmented when any morbid condition whatever occurs, such as inflamed gums, wounds, etc., of the mucous membrane of the mouth, dental caries and ulcerations, etc. Of these Miller found, by inoculation experiments on mice, rabbits and guinea pigs, many germs, the inoculation with which produced either death, or a pathological condition of the animals thus treated. These he calls "*Pathogenic Mouth Bacteria*." Of the varieties separated, the following were studied more in detail:

1. *Microoccus gingivæ pyogenes* ;
2. *Bacterium gingivæ pyogenes* ;
3. *Bacillus dentalis viridans* ;
4. *Bacillus pulpæ pyogenes*.

The first of these micro-organisms, *mic. ging. pyog.*, was found several times in a case of pyorrhœa alveolaris, in the deposit around the teeth of a very filthy mouth.

The second, *bact. ging. pyog.* was found in the same mouth as the foregoing, and also in a suppurating tooth-pulp of a second person.

*Bact. dent. virid.*, the third variety, was found in the superficial layers of carious dentine. In cultivation upon gelatine this bacterium produces a beautiful opalescent green coloring matter which it imparts to the gelatine.

The fourth bacterium, *bact. pulp. pyog.*, was found in a gangrenous tooth-pulp. The inoculating materials used, were pure cultures of the different germs, mixed cultures and gangrenous pulps, and the inoculations were made into pockets beneath the skin of the animals and by subcutaneous injections, and injections into the abdominal and thoracic cavities. The pockets were made as usual, at the root of the tail, and the injections with sterilized syringes.

Before giving the results of these inoculations, let us see what are the conditions necessary to be fulfilled, in order to establish unrefutable proof of the pathogenic nature of any given bacterium. According to Koch, a micro-organism must comply with the following requisitions, before its pathogenic character is determined, the so-called "*Koch's laws*," or "*rules*":

First—It must be proved to be present in all cases of the disease in question.

Second—It must further be present in this disease and in no other, since otherwise it could not produce a specific definite action.

Third—A specific micro-organism must occur in such quantities, and be so distributed within the tissues that all the symptoms of the disease may be clearly attributable to it.

Fourth—After removal from the body of an affected animal, and its growth in pure culture, the inoculation of the latter into susceptible animals, must produce the disease in question.

Miller's inoculations were followed by either local redness and swelling, abscesses, suppuration and gangrene of adjacent tissues, or blood poisoning, and in many cases by death from septicæmia peritonitis, pleuritis, etc.

Inoculations with mixed cultures proved more dangerous than when pure cultures were used, and still more effective when gangrenous pulps were used than with mixed cultures.

The diseases caused by the pathogenic bacteria of the mouth Miller considers under six heads, according to the point of entrance of the infection :

1. Infections caused by a breach in the continuity of the mucous membrane, brought about by mechanical injuries, (wounds, extractions, etc.). These lead, either to local or to general disturbances.

2. Infections through the medium of gangrenous tooth-pulps. These usually lead to the formation of abscesses at the point of infection (abscessus apicalis), but also sometimes to secondary septicæmia and pyæmia with fatal termination.

3. Disturbances conditioned by the resorption of poisonous waste products, formed by bacteria.

4. Pulmonary diseases caused by the inspiration of particles of slime, small pieces of tartar, etc., containing bacteria.

5. Excessive fermentative processes, and other complaints of the digestive tract, caused by the continual swallowing of microbes and their poisonous products.

6. Infections of the intact soft tissue of the oral and pharyngeal cavities, whose power of resistance has been impaired by debilitating diseases, mechanical irritations, etc.

7. Possible infections by the accumulations of the excitants of diphtheria, typhus, syphilis, tuberculosis, etc.

#### DENTAL CARIES.

It has been proven, beyond doubt, that decay of the teeth is caused by two different processes, namely: (a) chemical, (b) parasitical.

The first is a decalcification of the enamel, or dentine, or both, caused by the presence of acids in the mouth, which have been formed from the fermentation of starch and saccharine substances, resulting in a softening of these tissues, after which these latter form an excellent food-medium for many varieties of bacteria.

The prevention of dental caries depends, first of all, on strict cleanliness of the mouth, the importance of which can not possibly be over-estimated, the details necessary for the proper fulfillment of the same would be superfluous for me to suggest to you. Undoubtedly, good stiff tooth-brushes and plenty of clean water stand at the head of all measures of this nature. The next prophylactic means is the intelligent use of proper antiseptics.

By far the most perfect germicide known, that can be at all employed in this connection, is the bichloride of mercury, but the use of this substance is not without danger. It should not be used as a wash for the mouth in solutions of greater strength than 1 to 2000, and even then care must be exercised in its application. Other antiseptics which have been recommended for the oral cavity are salicylic acid, strength of 1:200, or 1:350 listerine, wintergreen oil, and like aromatic substances are suggested.

In this connection might be noted the germicidal properties of tobacco, either the juice of the leaf or the smoke of the burning leaves. Certain it is, from results obtained by many experiments and observations, that tobacco-juice, or smoke, very speedily destroys bacterial life, but I would not, on this account, advocate its use, as the evil results of excessive indulgence in the "weed" more than counterbalance any possible benefits resulting from its antiseptic action on micro-organisms of the mouth.

In discussing the subject of infection, attention should be directed to the danger which exists from the spread of infectious forms of bacteria that are liable to be present in the mouth in various directions. It is not difficult, under certain circumstances, to excite an inflammatory process in the middle ear, the transmission of septic germs taking place through the eustachian

tubes; similar results may also occur from pyogenic bacteria being carried from the mouth to the throat, lungs, parotid gland, antrum, and even to the brain, as stated by Bergtold.

When it is considered that of all diseases of a parasitic nature to which mankind is susceptible, dental caries is by far the most frequent, the possibilities I have just mentioned, can not be charged as being the improbable and unlikely speculation set forth by one who is "cranky" on the subject.

Upon reviewing the various literature on this question, especially those portions of it which refer to the dangers of infection between the dentist and his patient, the speaker was much surprised to find no advice offered to the dental profession by competent bacteriologists, as to the considerable (and oft-times *great*) danger present, to the patient, by pathological conditions the dentist *himself* may be suffering from at the time of operating, and to point out the necessity of establishing, by legislative measures if required, laws, or statutes, which would prevent the occurrence of such dangers.

I refer more particularly to the jeopardy in which human life is placed, when people are subjected to treatment by a practicing, *tubercular* dentist. This may seem, to many of you, as a bit of superfluous advice, and you may retort that such a circumstance is beyond the bounds of possibility, but I assure you, *I have seen a tubercular member of your profession practicing daily on unsuspecting, or ignorant, patients.*

My experience with dentists has been very limited, and therefore I am not in a position to make any assertion as to the frequency of such pernicious and dangerous proceedings; but the very fact that my slight personal observations resulted in the detection of *one* such case naturally suggests a possible more common occurrence of tuberculosis in practicing dentists than might be supposed. Since commencing the work incident to the preparation of this paper, one of the local members of your profession has detailed another case, which was under his own personal observation, of a *tubercular, practicing dentist.*

The *greatest* danger, under such circumstances, *is not*, as some of you might imagine, in the infection of the patient by the

transmission of the germs through the medium of the breath of the operator, but in the reception of tubercular material, which becomes dry on the handkerchief, clothing, linen, or instruments of the dentist. The prevention of such dessication is so extremely difficult and impracticable as to be discarded without serious consideration, if such (prevention) be presented as a possible prophylactic measure, to enable the victim of this malady to continue his professional work until physically unable to do so on account of the inroads of the disease.

It is not generally known that bacteria do not float in the atmosphere in the moist state, but only do so after desiccation, and then probably to no great extent, unless aided by more or less strong currents of air.

Tuberculosis is now almost universally considered to be an infectious disease, and of so contagious a nature that I candidly believe we shall, many of us, see the day when attention to preventive measures against possible infection from cases of this disease is as regularly insisted upon as are the sanitary requirements in cases of small-pox, yellow fever and typhus fever (with the exception of somewhat less vigorous quarantining) at the present day. The period in which to accomplish this much desired treatment of tubercular cases will depend upon the rapidity with which the laity, and *professional men* even, become educated to the full comprehension of the single and *sole* cause of the affection, the tubercle bacillus, and the proper realization of the benefits to be derived from the adoption of such measures. And to the intelligent efforts and advice of the members of the medical profession, as well as to the great aid which *you*, members of the dental profession can give by embracing each and every opportunity to inform your patients, especially influential citizens, as to the true character of tuberculosis, must the accomplishment of this end very largely devolve.

Of all the various ways by which tubercle bacilli find entrance into the human body (such as from the surface of the skin through wounds, by contusions, cuts, or otherwise; from the ingestion of milk and flesh from tubercular cows and animals, etc.), infection by inspiration—by the entrance of the dried germs

through the mouth, and so on to the lungs—far surpasses in frequency all other methods of transmission. And this can only be accomplished when the medium on which the micro-organisms have been discharged from the body dries, or disintegrates into powder or dust. For this reason the most dangerous source of infection is from handkerchiefs, or cloths on which the sputum has been received (unfortunately a too common procedure) and on which it becomes dry in an exceedingly short time. Consequently by merely preventing the sputum of phthisical persons from drying the most important kind of infectious matter may be rendered harmless.

The first contradiction I have seen by competent pathologists (who acknowledge the tubercle bacillus as the essential cause of tuberculosis) to the statement that the *commonest* source of infection is the inhalation of dried bacilli from handkerchiefs, linen, clothing, dust from the floors and ceilings of rooms, previously occupied by tubercular subjects, etc., was recently made by Dr. J. West Roosevelt, of New York.\*

Dr. Roosevelt maintained “that there was much more likelihood of getting an over-dose of the virulent germs” (of tuberculosis), “through the alimentary tract, either by the ingestion of meat, milk, or in children, by putting articles of every nature into their mouths, no matter where they may have lain,” than by the manner which I have just described. While recognizing the value of the opinion of so able an authority as Dr. Roosevelt I am convinced that his statement will not be corroborated by the majority of pathologists and bacteriologists in this country, or on the continent. True it is that much needless alarm may be created in the minds of the public by the advocacy of too severe and unnecessary measures of prevention, such as quarantining, etc., by prejudiced and over-zealous investigators, the effect of which would be the unjustifiable persecution of many poor victims of tuberculosis, and as I just suggested, the *only proper* course to pursue in dealing with this question is by persistently and intelligently educating the minds of the public as to the *exact* status of this matter.

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\*New York Academy of Medicine, Feb. 4, 1892; vide Medical Record, Vol. 41, No. 10.

Few pathologists at the present day believe in the theory of heredity as a cause of tuberculosis. But it is a fact that the offspring of consumptive parents, especially where the mother is affected, often develop sooner or later the disease, but the explanation is to be sought in a general impoverished condition of the organism, as indicated by enfeebled assimilative and nutrient powers, which are quite sure to follow as the inheritance from unhealthy progenitors.

What I have just said in regard to transmission naturally leads to the most interesting and important problem in bacteriology, namely, that of *immunity*; and I ask your indulgence for a few moments in order to state the theories at this time held in regard to this subject.

As you are probably all aware two principal views are advanced to account for the difference of susceptibility possessed by different animals to the same micro-organism, and also that exhibited by the *same* animal to *different* germs.

I might state here that immunity is of two principal kinds, to-wit: (a) *natural*, or "in-born"; (b) *acquired*, or "artificial."

The first of the theories of *natural* immunity is based on the *chemical* germicide properties of the blood-serum and tissue-juices of the body.

The second, or "*Metschnikoff's*" theory attributes the resisting power which an individual or animal may possess to the so-called "*phagocytic*" action of the tissue-cells of the body, more especially the colorless corpuscles, or leucocytes of the blood.

Metschnikoff believes the presence or absence of immunity depends on the ability or inability of the cells of the body to devour and destroy the bacteria. Such ability may be *natural* or *acquired*. In the latter case the cells, where they have once had the opportunity of devouring attenuated micro-organisms with a milder poison, which nature enables them to withstand, are so far accustomed to it that they can devour the most virulent material with impunity. This can be effected both by gradual adaptation, and also by a kind of selection in which only the strongest, most vigorous cells remain and transmit the acquired faculty to their descendants. The leucocytes are but

short-lived cells. A permanent resistance of the organism to a disease which it has once had, or against which it has been protected by inoculation is, therefore, only conceivable if we grant to the cells the power of transmitting an acquired property unaltered to their children and their children's children. This hypothesis,\* as must have been seen, presupposes an extraordinary docility in the protoplasm of the white blood-corpuscles, to which it attributes something like feeling, thinking and acting, a sort of mental perception. But if we raise no objection to this, there remain plenty of reasons for combatting the phagocytic theory as immunity.

In our opinion, the fact that it is essentially the excretions of the bacteria which produce, or are able to produce immunity, is difficult to harmonize with Metschnikoff's hypothesis, for if no living micro-organisms are present none can be devoured to accustom the cells to the poison and prepare the way for resisting more virulent successors. To overcome this difficulty it would be necessary to suppose that the reception of attenuated germs acts upon the cells only as a specific stimulant, to which they answer by a functional reaction, and that this stimulating power exists in the same degree, and works in the same manner, also, in the bacterial products. The theory of the germicidal action of the blood-serum, or plasma is, I believe, supported by more weighty authority than is the ingenious one of Metschnikoff.

I have thus forsaken the exact theme of my discourse from a belief that more benefit would be derived from the brief treatment of a subject, at best only partly understood by the highest authorities in this branch, but which one who has devoted much time in practical investigations must, necessarily, be better qualified to handle than the average practitioner.

Would the time (and, perhaps, your forbearance also) admit, much profit might be had from the further discussion of bacteria of the mouth, but the vast extent of the subject renders anything but a superficial consideration of it impossible.

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\*"Text-Book on Bacteriology," Frankel, translated and edited by Linsley, page 146.

As yet we are only on the *frontier* of the domain of bacteriology, and have only obtained a comparatively few facts, or details, of this most interesting and important kingdom.

What data and facts, investigations into the interior of this boundless area of unexplored territory of micro-organic life, will place us in possession of time, perseverance and unremitting efforts will prove.

We certainly have reason to believe that the knowledge of such points, at present undiscovered, together with their practical application, will be of inestimable value to mankind.

In closing, allow me to express my gratification for your kind invitation to participate in the proceedings of your valuable and flourishing society, and to thank you sincerely for the close and courteous attention accorded me to-day, and further, to record my obligations to one of your individual members, Dr. Hodge, who has rendered me every assistance possible in the collecting of material for and in the preparation of this paper.

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## Formation and Care of the Teeth.

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BY DR. K. L. CLEAVES, MONTPELIER, VT.

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Read before the Vermont State Dental Society, March, 1892.

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I presume all of you are more or less familiar with the subject upon which my paper is written, and perhaps I may not be able to present anything new to you, but possibly it may serve to freshen your memories somewhat on the subjects.

It might well be said of this as of the "fifth pair of nerves," that one has to learn and forget it seven times, before being able to remember it.

When I first commenced the study of the formation of the teeth, I thought it to be an extremely dry subject, but gradually I became more and more interested in it, until now there is no one operation of the whole animal economy in which I am more interested.

Many times a dentist is questioned by the better class of his patients, regarding the formation of the teeth. In such a case it is well for him to have at command a general idea of how and when they are formed, that he may be able to explain to them satisfactorily something about it.

But to go on with the subject, will say that I have abbreviated all that the subject will allow and yet touch on the most important points.

Let us first take into consideration the mucous membrane of the mouth. The epithelial layer of the mucous membrane is one and the same thing as that of the skin covering the body. The only point of difference is, the external covering of the body is kept in a dessicated condition by the atmosphere, while the oral mucous membrane is constantly bathed in saliva. Therefore the mucous membrane (of the mouth) and the skin are analagous and continuous structure. In a general way they are composed of two layers—the dermis and the epidermis—yet they have been further sub-divided. At a very early period of foetal life can be seen the first sign of cellular activity, in the epiblastic layer which covers the gums. By comparing the epithelial covering of the gums, we observe that it has two or more layers of oral cells, while the same membrane on the outer portion of the body has but one. This epithelial covering gradually thickens by the rapid cell-multiplication, until it gives rise to a slight ridge which locates the line to be occupied by the future arch of teeth. Beneath this thickened epithelial layer is a groove, or depression, in the underlying tissue, which gradually deepens, and takes a direction towards the center of the arch, as cell-multiplication advances. This epithelial band (as we will call it) is simply a dipping down of the natural covering of the mouth and is composed of the same elements as the epithelium of the mucous membrane of the mouth. The convex surface of the band is toward the outer side of the jaw. This peculiar curve is almost always seen and is one of the most characteristic features of the band. The walls of the band are composed of the infant layer of cells, while its center is filled with the older cells. The band, as seen at first, is broad, but as it develops and sinks deeper into the jaw it becomes narrower.

The jaw is deepest at the interior portion of the mouth and gradually becomes shallower until it finally disappears in the epithelial covering of the gums at the posterior portion. When this epithelial band is fully formed a lamina is given off from the inner side of the band. The formation of this lamina may be explained as W-shaped enfolding of the infant layer.

These two processes are termed the band and lamina. This lamina is only a continuous process of the epithelial band. Cell-multiplication seems to come to a stand in the band, while it still proceeds in the lamina, dipping deeper into the substance of the jaw. At this period the band becomes shallower and sometimes disappears, while the process of development is transferred to the lamina. Small buds make their appearance on the free margin lamina, and soon extend into slender cords, each cord forming in time the enamel organ of the temporary tooth. These buds correspond in number and position to the future deciduous teeth. The length of the cord varies, being shorter in the human than in some of the other mammals, and is also shorter in the temporary set, as those of the permanent have to descend beyond and beneath them.

The cord is composed of a solid ingrowth of cells which constitute the lamina from which it arises. These cells are oval or spherical in shape. They are sometimes spoken of as cylindrical in shape, when the layer is only one cell deep, but if more than one layer exists I believe they are usually spoken of as being oval or spherical. The cord at first pursues a horizontal course, until it attains considerable increase in length, when it turns sharply upon itself and takes a vertical direction more or less deeply into the substance of the jaw. After the cord has changed its direction, its extremity assumes a bulb-shaped mass. The part of the cord which forms the connecting link between the bulbous portion and the band, does not keep up with the extremity in growth, therefore it is rightly named the neck of the enamel organ.

At this stage of the development of the enamel organ the dentinal germ or papilla makes its appearance, which causes the enamel organ to become concave, although it does not become

separated from the sub-epithelial connecting tissue of the jaw, and its growth is upward, while the growth of the cord has constantly been dipping downward.

Should we examine the enamel organ at about the fifteenth week of the development of the embryo, we would find that a considerable change had taken place.

The primitive elements (composed of polygonal cells in the centre with an external layer of prismatic cells) have been notably modified. The cells of the central mass have been notably modified. The cells of the central mass have been changed into the stellate cells. These stellate cells are composed of a central nucleus, surrounded by a finely granular mass, which inosculates with the adjoining elements. The cells near the periphery maintain their primitive polygonal form for a time, but as the enamel organ increases in size they become stellate. After a time the base of these stellate cells presents the regular prismatic form of a hexagon. During the early stage of evolution the prismatic cells have the same characteristics on all parts of the periphery, but as soon as the papilla make their appearance those of the external or convex surface diminish in size until they finally disappear, while those of the internal or concave surface remain for the formation of the enamel organ. The cells on the concave surface of the enamel organ increase in length and their extremities form the slender process which are continuous with the filaments of the surrounding cells and constitute what is known as the stratum intermedium. This stratum intermedium consists of cells which have not become stellate, or we might call them young stellate cells. The enamel forming cells are developed from embryonal corpuscles, and these corpuscles are formed by the breaking or dividing of the prismatic cells. The cuticula clentis or "Nasmythe membrane" is formed from the enamel cells and may begin to form before any calcification of the dental tissue beneath. It may be seen on the surface of the enamel, after the eruption of the crown of the tooth, and may be separated from the surface of the enamel by the use of strong acids.

As the epithelium is undergoing this peculiar and interesting

process of development into the enamel organ, we find a projection of the corium of the mucous membrane rising up from the dental groove to meet it. This is called the dental papillæ, which papillæ are to form the bulk of the teeth. The first germ of the dentine appears as a dark semi-lunar mass at the bottom of the dental groove. At certain points where the subsequent teeth are to be, this young structure develops and pushes up against the enamel germs.

The papillæ is made of connecting tissue cells, similar to those found in other parts of the body. As the dentinal papillæ increases in size and pushes up against the enamel organ, it becomes constricted at its base, about where the enamel organ is reflected back upon itself.

The follicular wall [which begins to develop soon after the dentinal germ] gradually grows upward and embraces the enamel organ and papillæ, soon assuming the appearance of a distinct laminated membrane, which may be separated from the adjacent tissue except at the base of the papillæ. The dental follicle gradually grows upward until it gradually closes over the top of the enamel organ, beneath which is the papillæ, and the coming together of its edges produces strangulation of the epithelial cord, therefore the cord becomes ruptured at this point. The dental follicle also becomes separated from the mucous membrane.

At this stage the cells from the dentinal papillæ form a soft mass of animal material, which afterwards become filled in with lime salts to complete the dentinal tissue. After the dentinal papillæ has become covered over by the enamel organ, odontoblasts [dentine cells] begin to form.

The odontoblasts belong to the connective-tissue group, and are formed from the dentinal papillæ. The odontoblasts are seen as elongated cells, with numerous fine processes extending into the calcareous mass. As the processes, which the odontoblasts send out develop, they calcify on the outside, forming the dentine, while the uncalcified portion forms the dentinal fibrillæ. We might say that the odontoblasts superintend the depositing of the lime salts around the rod-like febrils, and thus tubular dentine is

formed. The deposits of dentine are the work of older cells on the surface of the dentinal pulp. Dentine is formed by the secretion of the lime salts around the fibrils of the odontoblasts, and these being rod-like, it is very plainly seen how the deposition takes a tubular form. The thickening of the dentine is by accretion of lime salts in such a way as to lengthen the tubuli. These cells persist throughout the life of the pulp, and have the power to form secondary dentine, when they are stimulated by the irritation of decay. This thickening is at the expense of the pulp cavity and of the size of the organ itself.

The remains of the odontoblasts is that layer which constitutes the investment of the pulp, lying between the nerves and vessels and the dentine.

Let us say a few words in regard to the development of the cementum. This process is only slightly modified from that of the development of bone. The circumference of the root before the deposition of cement is as large as it ever becomes, as the increase in thickness of the dentine is from the periphery toward the center at the expense of the size of the pulp. The thickening of the cement is from the first layer deposited upon the dentine externally, thus enlarging the circumference of the root. When this process extends beyond a certain limit, we have what is called *exostosis*, generally occurring later in years, from the result of constant irritation. The *pericementum* is very much like the *periosteum*, and superintends the deposition of the cementum. A single layer of *osteoblasts* or *cementoblasts* is first found around the outside of the dentine. Other layers follow, each assuming the characteristics of the first formed layer, until finally the desired thickness is reached.

We have seen how beautifully the process of development of three of the physiological divisions of the teeth is performed by the economy. Now let us direct our attention to the fourth, which is the dental pulp. The pulp occupies the pulp cavity in the center of the tooth.

We find the pulp to be the remains of the dentinal papillæ, after it has performed its work of dentinification. We also find that the dentine receives its nerve and blood supply through the

pulp. The nerves of the pulp are many, and consist of medulated and non-medulated fibers, which enter the pulp through the apical foramen. The pulp is an extremely sensitive organ, and is enclosed in a very delicate, almost structureless membrane, which is attached to the walls of the pulp cavity. A great many theories have been advanced in regard to the termination of the nerves, and I believe no definite knowledge has yet been presented. It is claimed by some that the fibers pass between the odontoblasts and either unite with the dentinal fibrils or pass between them into the dentinal tubuli. Others assert that the nerves become united with the stellate cells, which form a layer beneath the odontoblasts. The dental pulp, as age advances, diminishes considerably in size. Sometimes the degeneration is carried on to such an extent that the pulp becomes a shriveled insensitive mass.

What has been said so far has reference to the deciduous teeth. The permanent teeth, which later on are to take the place of these, arise from an epithelium cord, which originates from the cord of the corresponding deciduous tooth. This, however, does not hold good for all of the teeth, only, for instance, the incisors, cuspids and bicuspid. The permanent cord takes a vertical direction when sinking into the substance of the jaw, and at the same time assumes a spiral form. It can always be distinguished from the primitive cord by this peculiar spirality. This spirality of the permanent cord is necessary, as it permits the follicle to reach a point below a temporary tooth without stretching the cord. The origin of the cord for the permanent teeth is not always at the same time, but varies considerably.

In the human embryo, the cord for the permanent incisors may be first seen about the fifth month, while we find that their eruption does not take place until between the years of six and eight. We find that the permanent molars, which have no deciduous predecessors, originate in a different manner from those which have deciduous predecessors.

The follicle of the first permanent molar appears only a short time after the appearance of three of the deciduous teeth, which is about the fifteenth week of embryonal life, and does

not erupt until about the sixth year, therefore it is called the sixth year molar. It originates directly from the epithelium of the mucous membrane, back of the temporary teeth, where no follicle has preceded it.

The second permanent molar originates from the epithelial cord of the follicle of the first permanent molar, in the same manner as do the twenty anterior teeth. It takes a position back of the first permanent molar and is developed in line with those anterior to it. The origin of the third permanent molar or wisdom tooth, takes place in the same manner as that of the second permanent molar. Although we have said that the cords of the twenty anterior permanent teeth arise from the follicles of the temporary, yet sometimes they emanate directly from the epithelium of the mucous membrane. After the epithelial cord becomes detached from the enamel organ, it generally disappears by absorption, yet it is possible for some such masses to be left and become the enamel organs of supernumerary teeth.

Now, in conclusion, will say something in regard to the care of the teeth, as a suggestion in regard to what we dentists, as a rule, fail to do, and that is to impress upon parents the importance of proper food materials while the teeth are forming.

It is too often the case that the first visit of a child to a dentist is after the first teeth have come and gone, many of them, and the permanent teeth begin to give them trouble. Their deciduous teeth being extracted by their parents with a string, or they work at them themselves, until they can pick them out with their fingers.

About the time the six year molar is too badly decayed to save, without destroying its nerve, and after being made to believe from infancy that the dentist is the most horrible of horrible creatures, the child is presented with the question: "Doctor, why is it that children's teeth don't last as they used to?" Now this is exaggerated in many cases, but none of you can deny that it's truth has been too often verified in your own experience.

Now for seven months before until seven months after birth the first deciduous tooth is growing atom by atom as the neces-

sary elements of tooth substance are furnished by the mother's blood. And at the time of birth the germs of the permanent teeth are hidden in the gums, gradually forming, not to be called into active service until many years later.

Now, if the deciduous teeth are of so much importance as to require fourteen months for growth and development, while nine is sufficient for the eye and ear, I think they are of too much importance to suffer through neglect and carelessness. Commencing as far back as foetal life, when the child receives its nourishment from the mother's blood, can you introduce the proper food elements which will lead to a more perfect set of teeth?

The child, while dependent upon its mother, gets lime, phosphorous, potash and all the other elements of which the teeth are composed, just in proportion as the mother gets them. If the mother lives principally on starch, butter and sugar, neither of which contains a particle of tooth-forming material; would it be strange if the child had poor teeth, especially teeth poorly enameled. Now, I think there are well defined principles, which, if closely carried out during the formation and growth of the teeth, would partially if not wholly overcome this difficulty. In talking with one man quite recently on this subject, he said: "Why, if teeth should be brought up to that standard, where they needed no filling at all, what would you dentists do for a living?" I hardly anticipate such a time when there will not be plenty of teeth to fill. But I believe there is a method (even in our generation) by which teeth can be improved to such an extent, that when a dentist exercises his utmost skill and care in filling a cavity, he will not do so with the feeling that, perhaps, in a year or two it will come back to him decayed around the filling.

Dentistry at the present time has reached that standard, where it stands shoulder to shoulder with the medical profession. In the colleges anatomy and physiology, and many other branches are taught as thoroughly as at the medical schools. Not enough attention is paid to those branches in dentistry. The manipulative part in dentistry has already reached a high degree of excellency. When a conscientious dentist, who thoroughly understands

his business, fills every tooth the best he knows how, with the material he thinks is best adapted for that tooth, he is doing all that can be done in that direction. Then, when teeth fail under such proficiency, as they sometimes do, what is to be done?

Patients should comprehend that the finest and best work will not preserve teeth in defiance of their abuse and carelessness. My opinion is that every dentist should impress upon his patients these facts:

Instruct mothers in regard to the best articles of food for their growing children.

Instruct parents as to the means of preventing the premature loss of the deciduous teeth and preservation of the permanent ones. And too, the importance of thorough cleanliness at all times. In regard to articles of diet, it would be well for us to familiarize ourselves with the constituents of tooth substance and where they may be found.

We would be safe in telling our patients that everything that grows will make good teeth, if eaten in its natural state, no elements being taken out. Horses, cows, sheep and other animals that live on nature's own production have good teeth. For children to be strong and healthy and have sound teeth, it would hardly be necessary for them to eat grass or go back to a state of savagery, but take food in the proper proportion as nature provides it. For instance, phosphate of calcium is the principal element in tooth substance. That is found in milk, eggs, potatoes and many other vegetables and fruits, but especially in the grains or cereals. It is most abundantly found in wheat "the staff of life," but not in the fine white flour, that the good housewife is so fond of making into snowy loaves of bread. I would advise the free use of lime water with the milk, as much as would be assimilated not to be distasteful. Would also advise it as a mouth wash after the use of acid fruits, lemonade, etc. It is very easily prepared and inexpensive. A teaspoonful in a glass of water or milk would not be noticed and would have a wonderful tendency towards hardening the teeth. Even as a mouth wash a portion of it would be taken up by the absorbents and eventually reach the teeth through the general circulation. I

will not further discuss the articles of food, but will leave it to your better minds to consider.

I hope the time will come when people will pay more attention to diets containing tooth-forming material and arrive at results that many already have attained.

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### **Immediate Root Filling.**

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BY DR. S. HUBBELL, BURLINGTON, VT.

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Read before the Vermont State Dental Society, March, 1892.

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In preparing a paper on the subject of immediate root filling, it is not my desire to present any new methods of root filling, or in fact to discuss any of the methods now in use. I wish merely to present my reasons for believing that under certain conditions the practice of immediate root filling cannot be successful.

There are many conditions of the roots of teeth presenting themselves for filling, from the healthy root canals through all stages of inflammation, decomposing and dead pulps, complicated with disease of the peridental membrane, and alveolar abscess.

It is due to these conditions that so many men differ in their methods of treatment, in regard to the very important point as to the proper time for permanent filling.

I believe the method of immediate root filling would be universally adopted, if we were only required to fill healthy roots; that is, canals from which healthy or living pulps had been extracted. These are the most favorable cases, as an incised wound is left at the apex of the root which will heal by first intention. The canal may be permanently filled at once with slight danger of irritation following, provided all proper aseptic precautions have been observed.

If the pulp has been destroyed by the use of arsenious acid, and the acid has been confined wholly to the pulp, and its removal is experienced with some pain, we may feel comparatively safe in filling at once.

We have undoubtedly noticed the dentine and enamel of teeth become partially and sometimes thoroughly discolored from the use of copper amalgam with which they have been filled.

If these dense tissues will allow this coloring matter to penetrate them, may we not well believe that septic matter from a pulp having been a source of infection for a long period, and having caused alveolar abscess, will thoroughly infiltrate the dentine and at times reach the peridental membrane. For the tubes, which penetrate the dentine, opening with their largest diameters into the pulp chamber, are, when a tooth is in a normal condition a source of strength and nutrition, but when the tooth is attacked with caries they facilitate its decalcification, and finally decomposition of the organic which has served for a matrix for the inorganic. The tubes in this condition, and the imperfections which are liable to be present in the dentine, invite the free ingress of fluids which consume and disintegrate the organic material of the tooth, and supply as their products a mass of septic and decomposing tooth structure. Under these conditions how can we accept the statement that all roots can be made aseptic by one treatment, the root permanently filled, and without any future trouble, (as it would necessarily be by the immediate root filling method.) The decomposition, which renders the most uncertain and troublesome treatment of any of the pathological conditions of the pulp, requires the ingress of atmospheric germs.

This septic poison, aided by this prime factor, atmospheric air, so inflates the surrounding tissues, that by long standing the most thorough treatment will in some cases prove effectual. It is with this class of diseased roots that we find so wide a difference exists between the immediate root filler and the practitioner with more conservative ideas. Great confidence is placed on nature's curative power by the typical immediate root filler. This power is everywhere present in all parts of the body, yet its power to heal cannot be definitely known.

It is without doubt a safe practice to keep the root canal open until we have more conclusive evidence that a cure has been effected than that of the termination of the discharge. We

should look for further results, the evidence of new tissue being formed by granulation at the apex, and the fistula healed. Even at this stage of treatment a positive cure may not be effected. Should any amount of inflammation appear, especially if the patient is in a depleted condition caused by constitutional disturbances, the new tissue formation is liable to break down and we still have a chronic case of abscess. In blind abscess and all other complications which are apt to follow this precipitate method, immediate root filling, the surgical process of opening up the gums and drilling down through the alveolus to the abscess is frequently mentioned as an effective and painless operation. We may treat the abscess through this opening, but not nearly so effectually as through the nerve canal. Besides the uncertainty of affording relief it must be performed at the most painful stage just before the formation of pus.

The papers and discussions which have been presented on this subject in the past, have had, I think, a good effect on our private practice. It has resulted in the adoption of better methods of antisepsis, and we, who have failed in the two extremes of over treatment and immediate filling, will be competent to practice more exact methods, and no doubt in the future have more uniformly good results in our efforts to save pulpless teeth.

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### **Pulp Protection by Cavity Lining.**

BY G. F. CHENEY, D.D.S., ST. JOHNSBURY, VT.

Read before the Vermont State Dental Society, March, 1892.

In presenting the subject of pulp protection I aim rather to bring out a discussion of a much-neglected subject than to offer anything particularly new (I am sure most of us see evidences of this neglect in our daily practice), neither do I intend to discuss pulp capping, but protection of unexposed pulps from thermal influence through metallic fillings by cavity lining.

It is a well-known fact that thermal influence will account for the death of thousands of pulps under gold and amalgam

fillings, and this is the beginning of a series of disturbances which in time result in abscesses.

I have seen so many abscessed teeth, where, upon removal of the filling, sufficient apparently sound tissue was found to have fully protected the pulp, that I am inclined to believe that in this climate some protection should be used under most of our metallic fillings, especially in approximal cavities of lateral incisors and bicuspid's where the pulps come so near the surface. Without doubt, if a properly inserted lining had been used in these cavities the pulps could not have been anything but preserved. Of course it is possible that in a few instances the death of the pulp may have been caused by violence, like a blow, or in biting hard substances.

In teeth where there is the slightest chance for the pulp to become injured by thermal or electric influences the safe course is best. Too much thought and care cannot be given to the protection of the pulp. We must always bear in mind the larger proportional size of the pulp in early life, the possibility of its occupying an abnormal position, the chances of there being a crack or fissure extending to it, and of a point of it coming nearly to the surface. (These chances are very beautifully illustrated in the *International Dental Journal* by Dr. Andrews.)

We must also be able to diagnose the difference between sensitive dentine and tenderness of the pulp. Sensitive dentine responds when excavating over a considerable portion of the cavity walls, but does not respond to simple pressure; while, when in near proximity to the pulp it responds quite as readily to pressure as to the cutting instrument and is confined so completely to a single point that the danger is at once suggested to the operator.

In deep-seated cavities the necessity of caution becomes greater and the danger of intruding upon pulp territory increases, and unless carefully protected thermal changes may prove a disturbing influence which will give rise to more serious trouble.

For the protection of the pulp against these influences I should recommend something with as little conductivity as the case will admit. Scores of different materials have been in use;

of these I will only mention a few, namely: varnish and the various zinc plastics, oxyphosphate, oxysulphate and oxychloride of zinc. To me varnish is the most useful. I use the sandarac gum dissolved in alcohol, and quite thin. The effect of varnish lining is to leave upon the cavity walls a thin semi-opaque whitish film which is non-conducting, non-irritating, insoluble and more in harmony with dentine than any metallic substance, and can be used in any cavity no matter how shallow, because of the small amount of space it occupies. The operation of varnish-lining is very simple, having the rubber-dam adjusted and the cavity properly dried, a small pellet of cotton is dipped in the varnish, conveyed to the cavity touching the bottom and walls. Five or ten minutes should be allowed for hardening which can be hastened by hot air. In some cases I take a piece of tissue paper, dip in the varnish and place over the cavity bottom.

In approximal cavities of the posterior teeth, especially those extending below the gum margin, we sometimes find ourselves in close proximity to the pulp, with barely depth enough for anchorage to the filling, I find nothing else will take the place of varnish in these cases for a lining. Varnish will prevent filling material showing through thin enamel walls, which might be very unsightly without it.

Oxyphosphate of zinc is an excellent liner, it is adhesive, does not shrink, and is indicated where the walls of the tooth need strengthening. In deep-seated cavities where undercuts exist, if the enamel is strong it need not be cut away, for when hard cement is carefully packed in its place it forms a support when hard, almost equivalent to dentine. A cavity cut in it to a depth a little greater than enamel, reduces the final filling with gold to an operation of the simplest character, as this cavity has a hard, firm base of cement and a boundary of cement and tooth substance, or of the latter alone. When using an oxyphosphate in deep-seated cavities we must not forget the necessity of protecting the pulp against the effect of phosphoric acid. This can be done by varnishing the bottom, or by using a little oxyphosphate of zinc, or a part of oxide of zinc and oil of cloves.

Oxysulphate of zinc is probably one of the best pulp protectors which has ever been used, is easy of adaptation and perfectly

non-irritating, alike to sensitive dentine and to the dental pulp, and is probably the best material to be used where the pulp is nearly exposed. Place a small amount of the thinly mixed oxysulphate over the bottom of the cavity, allowing a few minutes to set, then finish the lining by covering it with oxyphosphate of zinc.

Oxychloride of zinc, although used quite extensively, is not a reliable liner except when used in small quantity, it being a notable shrinker when used in bulk, which makes it very much inferior to the phosphates when we wish a strengthener for the cavity walls. It is irritating and should not be used near the pulp, except over varnish or oxyphosphate. It has been said that oxychloride of zinc permits of no decay in adjoining tooth structure.

In 1888 Dr. Kells, of New Orleans, by the use of the thermostat, an electric instrument, demonstrated before the joint meeting of the American and Southern Dental Societies, at Louisville, Ky., the conductivity of heat and cold through filling material.

He says: These may be divided into classes, the metals coming first as the best conductors, the difference between them being slight; next comes the cements, the oxyphosphates being a shade poorer than the oxychlorides; then the gutta-percha come last, although far from being non-conductors, not even equalling enamel. He further says that the oxyphosphates and oxychlorides are such comparatively good conductors of heat and cold, that they should not be used alone for capping pulps, exposed or nearly exposed. That such pulps should be protected by a layer of gutta-percha fully 1-16th of an inch in thickness when possible.

Gutta-percha I have used very little and hardly feel like saying much about it, but from what little experience I have had with it, I should be afraid to use it near the pulp in such quantity as Dr. Kells recommends for fear of expansion; would rather depend upon varnish.

In a paper read before the First District Dental Society of New York last October by Dr. Kells, he further says: The

method of testing the thermal conducting powers of various filling materials, and comparing them in that respect to enamel, is as follows: The enamel of a sound molar was hollowed out into the shape of a cell. Similar cells of the same size were made of gold, tin, amalgam, oxyphosphate of zinc, oxychloride of zinc, red gutta-percha and Hill's stopping. In the apparatus before me this thermostat is connected, the cells of the materials to be tested, and warm water is ready for demonstrating their conductivity. I will first place upon the disk the cell of gold, and filling it with warm water, our ears at once corroborate what we already know as to its conductivity. For no sooner had the gold cell been filled with the water than it at once conducted the heat to the disk beneath. Replacing the gold by tin and amalgam successively the same results are produced.

The oxychlorides and oxyphosphates will follow, when it is readily perceived that more time is required to heat the disk, thus demonstrating them to be poorer conducting agents than the metals, but far from being non-conductors.

We will next try gutta-percha and Hill's stopping, which prove themselves much poorer conductors; but give them time, and the bell does ring.

Lastly, I place the enamel cell on for demonstration, with the result that sufficient heat to close the circuit is not transmitted to the disk.

From these experiments we may conclude that, contrary to the general opinion held, the oxyphosphates and the oxychlorides of zinc are relatively good conductors of thermal effects, and further, that for protecting the dental pulp nature has provided a shield that has not yet been successfully replaced by dental science.

One other combination I wish to speak of, although perhaps not strictly belonging to the subject.

Some four or five years ago I filled a bicuspid approximately with amalgam, not thinking of any possible chance of thermal trouble. A few days later the patient returned, saying that she could not take the cold water or breathe cold air into her mouth without pain in the tooth. I tried several remedies, but to no avail; the trouble still continued. Finally I drilled into the

crown, making a small cavity, which I filled with gold in such a manner that the gold came in contact with the dentine of the tooth and the amalgam filling, when the trouble ceased. Since then I have treated one or two other cases in the same manner with equally good results. In a paper read by Dr. Stockwell before the Odontological Society of New York, he explains this action thus: In regard to the question of thermal influences there is no doubt but that Robinson's foil is a better non-conductor than gold, and this would in part at least account for the immediate favorable results. But there can also be little doubt that the galvanic action set up by this combination taken in connection with the fluids of the mouth, lends an impulse toward the removal of those physiological sensations resulting from thermal influences. There can be no doubt at all that the combination of amalgam and gold, when placed in contact with the teeth and fluids of the mouth, will create an electric current, and I am assured by competent authority that when a tooth is so filled the current will flow in the following direction, namely, from the amalgam down through the body of the tooth to the pericementum, from it to the saliva, and from it or through it to the gold.

In the *Dental Review* for February, this year, are given some experiments upon the conducting powers of different materials which are used for filling purposes by Dr. Gilmer, of Chicago, as follows: Gold, 1000; Lawrence amalgam,  $852\frac{5}{11}$ ; copper amalgam,  $702\frac{7}{10}$ ; tin, 590; oxyphosphate of zinc,  $584\frac{27}{110}$ ; oxychloride of zinc,  $525\frac{25}{60}$ ; artificial dentine, 525; gutta-percha, 520. He also states: A test of the conducting qualities of alloys presents curious results. For instance, if one per cent. of silver, which is represented as a conductor by 1000, be added to gold, the conducting of the alloy is changed from 980, which gold alone gives, to 840. If two metals be combined, one being the best known conductor, and the other the poorest, the latter predominating, the conducting quality of the alloy formed is no better than if it did not contain a particle of the better conductor. All this proves to my mind that combination fillings of gold and tin, or gold and amalgam, should be classed among the pulp protectors.

## Dentists and Dentistry as Seen by Our Patients.

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READ BY DR. W. H. WRIGHT, BRANDON, VT.

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Read before the Vermont State Dental Society, March, 1892.

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This world contains a great deal of trouble; but a convention of dentists represents more misery to the square inch than any other assemblage of a like number of men, and the memory of past experiences with them brings back recollections of days that lasted only too long.

Of all the pain that flesh is heir to, what can equal the tooth-ache? From infancy to old age it is one constant struggle with teeth, first to grow them, then to keep them, and lastly to be rid of them altogether, then to invest in false ones.

Just why the First Great Cause did not make the jaw-bone and teeth all one—permanent—and without nerves, has always been a mystery; but after the mistake had been made, dentists had to be evolved, and it appears they have come to stay.

It is astonishing what an amount of ignorance an educated man may possess; good common sense is not found alone in books, it is a simple homely quality, which is not always inherited, and the bluest blood may lack its vigorous strength.

No profession needs more good sense than a dentist's. The recipient of the miserable experiences of people needs discernment and a silent tongue. No doubt there are many cranks among patients, but what will reduce a strong healthy person to idiocy sooner than a jumping tooth-ache?

It would be well, if when the dental student had received his diploma, he should be required to undergo, at least, one trial of inhaling ether, the attendant pleasure of having teeth extracted, with a piece of jawbone attached, his most sensitive tooth bored out and filled, with all the minor punches and scrapes which are thrown in, how many dentists would there be in the country? not enough for a corporal's guard.

Did anybody ever hear of a dentist having a tooth pulled? *Never.* Did anybody ever know of a dentist wearing false teeth?

The *oldest inhabitant* never heard of a case. Did any dentist ever have the nerve to have a tooth killed? No, with a big *N*. Dental students talk glibly of nerves, a most delicate and sensitive thing, to be tenderly cared for and approached with fear and trembling, that a tooth pressing on a nerve will cause all the "ills flesh is heir to," but as soon as their diploma is framed, they proceed to eradicate every vestige of pity from their system, invest in a dental chair manufactured of iron, made strong on purpose to hold aches (which they encourage for business purposes), then they solicit victims; and they scrape, and file, and drill, never losing an opportunity to touch the sorest spot, they will beguile you with their silvery tongue, but the first good chance, *ough*, and you wish you had died in infancy, and you *know* the top of your head has lifted a foot at least. After your very best feelings have been *harrowed* and *dragged*, they will chuck in the filling, take your money, smile blandly upon you, and invite you to call again. If there were more good mechanics among dentists, there would be more well-fitting false teeth, it makes one feel pleasant to have them tilt from one side to the other while trying to eat, and very likely to leave a corn. Dentists talk fluently about molars and grinders, incisors and eye-teeth, that every tooth has its own motion, spring and nerve, and those nerves all lead somewhere (nerves usually let folks know where they are), but many a man who could build a rail fence scientifically has been swallowed up in the dental profession, who ought not to have anything more *nervy* than a rail to operate on.

It is not expected that a dentist will be all saint-like, as it is seldom he has saints to deal with, neither does he cut his wisdom teeth earlier than his patients, but he should aspire to be *the best* in the profession, take pride in doing his *work well*, and not trust to his professional dignity, or the apprentice in the back room to do a *good job*.

In these days of microbes, bacteria, germs, etc., is it a wonder that any one is left *alive*, and dentists are to be held responsible for the health of future generations. Who can tell just what spasm the digestive organs undergo, when the teeth do not act with equal pressure while chewing a tough steak?

The medical fraternity have always occupied the "high seats," but a thorough mastication of food is the best doctor, and we look to the dentist for a preventive from the all-destroying germs of disease. *The surest sign of health is a clean mouth*, and with all the facilities for a scientific education, laboratories, lecture rooms, and improved mechanical appliances, it would seem as if our troubles were nearly over.

But we ought not to fail in noticing the other side of our subject. Every cloud has a silver lining, and the dental operator is no exception. As we approach his realm it looks like a cloudy darkness, and everything in it wears the forbidding aspect of a chamber of horrors; but when all is over, the pain gone, and our teeth made as good as new, we leave with light and not ungrateful hearts. It is then that we recognize the substantial benefits bestowed by the dental professors upon our generation in relieving an evil which they did not cause, and in saving us from the fate of being a toothless race, to be fed on pap the rest of our days. Thousands of happy patients can testify to the relief which they have found through the skill acquired by much labor and study, and are ever ready to honor those who have conferred upon them exemption from suffering, and so added both to the power and the enjoyment of their lives. It was well we did not need such services, but needing we should be poor without them. It is one of the many benefits conferred by science upon us that those who are acquainted with its lore find there is a practical power to bless the world.

Let us have good men in the profession, *with all* the words imply, men who make a *thorough study* of their *business* and are *never too old to learn newer methods*. Men of solid worth, GENTLEMEN. The community look up to professional men for an example. They are expected to have, added to their natural talents, the refining influences of our institutions of learning, and are expected to do their *level best*, and above all should *learn to know when they don't know*.

LOUISA HALL.

## PROCEEDINGS.

### Vermont State Dental Society.

The sixteenth annual meeting of the Vermont State Dental Society held at the Van Ness House, Burlington, on the sixteenth, seventeenth and eighteenth of March, was one of the best attended and most interesting of any held thus far, fifty-five being present at the first session, the number being increased to eighty-five the next morning. Among them were several prominent dentists from other States and Canada.

The meeting was called to order at 7:30 o'clock Wednesday evening, and after the preliminary business had been disposed of, Dr. James Lewis, gave an address of welcome which was followed by papers from Dr. S. Hubbell, of Burlington, on "Immediate Root Filling;" Dr. G. W. Hoffman, of White River Junction, on "Dental Legislation," and Dr. C. W. Staples, Lyndonville, "A Practical Cheoplastic Plate," with models.

At the Thursday morning session, papers were read by the President, Dr. W. S. Curtis; Prof. J. H. Linsley, of New York, "Micro-organisms of the Mouth," demonstrating the action of these microbes upon different substances. All pronounced this paper one of the best ever read before the society. Dr. H. L. Cleaves, of Montpelier, wrote of "The Formation and Care of the Teeth," and Dr. Forest G. Eddy, of Providence, R. I., "Use of Gutta-Percha as a Root-Canal Filling." This paper showed large experience with this class of fillings. Dr. Eddy uses the crude gutta-percha dissolved in chloroform.

Thursday afternoon until four o'clock was devoted to clinics by the following gentlemen: Dr. C. A. Timme, of New York, demonstrated the making and setting of Enamel Inlays. The inlays being fused over the flame of an alcohol lamp.

Dr. F. S. Belyea, of Boston, Crown and Bridge-Work, making and setting three different bridges during the three days' meeting, which were very beautiful pieces of work, and proved Dr. Belyea a master of this class of dentistry.

Dr. G. O. Webster, of St. Albans, Staining Artificial Teeth by painting them with paints sold by Ash & Co., then burning them in a furnace. This work seems very nice when one wishes gold on artificial teeth or when representing a tobacco-chewer's teeth.

Dr. J. E. Waitt, Boston, exhibited the Packard Ether Inhaler with improvements by himself; a very ingenious apparatus for rapid anæsthesia with either ether or chloroform.

At 4:30 o'clock the meeting was again called to order, and a paper read by Dr. G. F. Cheney, "Pulp Protection by Cavity Lining," followed by an interesting paper by Dr. W. G. Beers, of Montreal, "Some Observations During Pregnancy." Dr. H. C. Merriam, Salem, Mass., followed on "Professional Journalism," and Dr. A. J. Parker, of Bellows Falls, on "First Dentition."

The entire evening was devoted to a banquet and social enjoyment.

At 9 o'clock Friday morning the meeting was called to order and officers for the ensuing year were chosen, as follows: Dr. Geo. F. Cheney, President; Dr. A. J. Parker, First Vice-President; Dr. W. H. Wright, Second Vice-President; Dr. Thos. Mound, Secretary; Dr. W. H. Munnsell, Treasurer. Executive Committee, Drs. E. O. Blanchard, Geo. O. Webster, and C. W. Staples. Dr. G. W. Hoffman, State Prosecutor.

After the newly elected president had taken the chair, papers were read by Dr. C. G. Campbell, St. Albans, "Pulpless Teeth," and Dr. W. H. Wright, "Dentists and Dentistry as seen by our Patients."

The meeting was adjourned to meet the third Wednesday in March, 1893, at St. Albans.

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### Resolutions on the Death of Dr. W. H. Atkinson.

*To the Vermont State Dental Society, Gentlemen:*

It is recorded that Dr. William H. Atkinson, an honorary member of this society is dead. But *such men* never die. Their thoughts and deeds are immortal—they live forever.

His was a master mind, richly endowed with rare gifts. An original thinker, with a keen and swift insight into the heart of things.

He persistently opened his mind to nature and science and they rewarded him in a wonderful revelation of their secrets.

While he hated shams and a smattering of truth, he was generous toward all mankind. He had a heart that was as large as a mountain, and a love that was world wide. He gave all his powers of body, soul, and spirit, to the profession he loved so well, and to the friends whom he loved so much.

He was a grand man, a sincere man, a man of integrity, an honor to the dental profession.

He said many times before going hence: "Whenever you, my brethren, assemble in the interest of dental science, I will be with you in spirit."

We will ever welcome that spirit of love and progress, possessed in such large measure by our beloved brother.

We regret that we can no longer hear his words of wisdom, or feel the magnetic throb of his noble heart, but we bless and revere his memory.

J. L. PERKINS,

R. M. CHASE,

G. F. CHENEY,

*Committee.*

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## COMMENCEMENTS.

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### German—American Dental College.

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The annual commencement exercises of the German American Dental College of Chicago, Ills., were held in the college building, on March 26th, 1892.

The number of matriculates for the session was ten.

The degree of Doctor of Dental Surgery was conferred on H. Schnitker.

## University of Pennsylvania—Department of Dentistry.

The thirteenth annual commencement of the Dental Department of the University of Pennsylvania was held at the American Academy of Music, of Philadelphia, Pa., on May 6, 1892.

The number of matriculates for the session was one hundred and sixty-nine.

An interesting address was delivered by John Guiteras, M.D., Professor of General Pathology and Morbid Anatomy.

The degree of D.D.S. was conferred by William Pepper, M.D., LL.D., Provost of the University, upon the following:

| NAME.                        | RESIDENCE.     |
|------------------------------|----------------|
| Armada, Carlos A. de.....    | Brazil         |
| Ayers, Josiah.....           | P. Ed. Island  |
| Baer, Harry K.....           | Pennsylvania   |
| Beitzel, Walter G.....       | Kansas         |
| Benninghoff, Joseph L.....   | Pennsylvania   |
| Berger, Johannes.....        | Germany        |
| Bodine, Fred. M.....         | Pennsylvania   |
| Bond, Francis H.....         | Pennsylvania   |
| Bonwill, Edward W.....       | Pennsylvania   |
| Bowen, John J.....           | Rhode Island   |
| Brown, Andrew Law.....       | Connecticut    |
| Christensen, Wilhelm E.....  | Denmark        |
| Clark, Frank T.....          | Pennsylvania   |
| Coen, Edward C.....          | Illinois       |
| Condict, Frederick L.....    | New Jersey     |
| Cook, Frank P.....           | Pennsylvania   |
| Cooper, William M.....       | Pennsylvania   |
| Crankshaw, Charles W.....    | Pennsylvania   |
| Danforth, Joseph T.....      | Pennsylvania   |
| Diefenderfer, Victor H.....  | Pennsylvania   |
| Dreher, Jeremiah H.....      | North Carolina |
| Eldredge, J. Smallwood.....  | New Jersey     |
| Ernsmere, John B.....        | New York       |
| Flexer, Richard J.....       | Pennsylvania   |
| Gearhart, J. Beaver.....     | Pennsylvania   |
| Gilbert, Lewis H.....        | New York       |
| Goddard, Henry Ernest.....   | England        |
| Grubb, A. Herbert.....       | Pennsylvania   |
| Gunn, William.....           | New Zealand    |
| Hamilton, Harry B.....       | New York       |
| Hart, Arch Combs.....        | California     |
| Hause, Edward B.....         | Pennsylvania   |
| Haynes, Melvin G.....        | New York       |
| Hine, Robert H.....          | Connecticut    |
| Holmes, Walter T.....        | Connecticut    |
| Hotz, Paul.....              | Switzerland    |
| Ives, A. Scott.....          | Canada         |
| Joachim, Edward B.....       | Pennsylvania   |
| Johnson, George H. jr.....   | Bahamas        |
| Johnson, Oakley.....         | Washington     |
| Johnston, H. Frank.....      | Canada         |
| Kittams, James H.....        | New York       |
| Kniewel, Johannes.....       | Germany        |
| Landsberg, Bernhard.....     | Germany        |
| Lapp, Albert W.....          | Pennsylvania   |
| Lawton, Burtis E.....        | Nebraska       |
| Lemker, W. J. ter Kuile..... | Holland        |
| Leonhardi, Charles J.....    | California     |

| NAME.                       | RESIDENCE.      |
|-----------------------------|-----------------|
| Le Suer, William J.....     | New York        |
| Ligonde, Louis G.....       | Hayti           |
| Lopez, Jose Lucio.....      | Central America |
| Lukens, Clarence D.....     | Iowa            |
| Lynch, Patrick F.....       | Pennsylvania    |
| Matthey, Edouard.....       | Switzerland     |
| Middaugh, W. Clay.....      | Pennsylvania    |
| Mitchell, Vethake E.....    | Ohio            |
| Murto, Frank D.....         | Pennsylvania    |
| Nellis, George H.....       | New York        |
| Newgarden, Charles.....     | Pennsylvania    |
| Parshall, Edward E.....     | Pennsylvania    |
| Phipps, Harry D.....        | Texas           |
| Protsman, Albert B.....     | Indiana         |
| Richards, John W.....       | Pennsylvania    |
| Ridgway, Shessie Worth..... | Pennsylvania    |
| Ross, Alfred T.....         | Pennsylvania    |
| Rymer, James Francis.....   | England         |
| Saunders, T. Darwin.....    | New York        |
| Schoff, P. Frank.....       | Pennsylvania    |
| Segar, J. Clark.....        | Connecticut     |
| Seymour, Robert J.....      | Canada          |
| Skillman, E. Harvey.....    | New York        |
| Smith, A. Fowler.....       | New York        |
| Sowash, W. Harry.....       | Pennsylvania    |
| Stathers, James R.....      | West Virginia   |
| Stewart, Charles A.....     | Pennsylvania    |
| Swing, Harry R.....         | Pennsylvania    |
| Wardell, Frank C.....       | Pennsylvania    |
| Whitlock, Edward P.....     | Pennsylvania    |
| Whitmer, S. Edwin.....      | Pennsylvania    |
| Willis, Albert Lincoln..... | Washington      |
| Wimmer, George J.....       | Pennsylvania    |
| Windmuller, Percival.....   | Germany         |
| Wirthaus, Carl.....         | Germany         |
| Wuensche, Eugen C.....      | Germany         |

JUNE 11, 1891.

|                         |               |
|-------------------------|---------------|
| Adams, Philip W.....    | Massachusetts |
| Foster, A. Lee.....     | Pennsylvania  |
| Horter, William B.....  | Pennsylvania  |
| Lawton, George A.....   | Connecticut   |
| McCarthy, Thomas A..... | New Hampshire |
| Macdonald, Robert.....  | Australia     |
| O'Bourke, John M.....   | Cuba          |
| Ulrich, George R.....   | Pennsylvania  |
| Total 92.               |               |

### Boston Dental College.

The twenty-fifth annual commencement exercises of the Boston Dental College were held in Berkeley Temple, Wednesday, June 15, 1892, at 7:30 P. M. An address was delivered by B. S. Ladd, Esq., and the valedictory by Ellsworth N. Brown, D.D.S.

The degree of D.D.S. was conferred on the following graduates by the President of the College, I. J. Wetherbee, D.D.S.:

NAME.  
John Charles Fremont Bridge  
Karl Schurz Brock  
Ellsworth Newton Brown  
Richard Bullock Callaway  
Thomas Patrick Cahill  
Stephen Harry Chase  
Pearl Raymond Copeland  
Thomas Francis Cuff  
William Vaughan Davies  
Albert Jones Derby  
William Henry Duddy Boston  
Walter Lovett Dunton  
Arthur Ellis Estebrooke  
James Andrew Ewing  
John Wood Forbes  
\*Guy Norman Gammon  
Daniel Griffin  
William Irving Hervey  
\*Mozes Jessurun

NAME.  
George Nelson Johnson  
Philip Patrick Kelley  
Albert Henry Ketcham  
John Stephen King  
Irving Miles Luce  
John Fletcher Maloney  
William Rodney Marsh  
Frank Rittle Mayers  
Norry Mielt  
Louis Dearborn Millett  
William Samuel Pearman  
Charles Nahum Piper  
Edwin Alexander Quinn  
Frederick Alexander Robinson  
Julius Stahl  
William Pray Swasey  
George Lawrence True  
John Edward Walsh  
Clarence Parker Whittle

Total 38.

\* Guy Norman Gammon and Mozes Jessurun have fulfilled all the requirements, but not being twenty-one years of age cannot now receive the degree.

### Harvard University—Dental Department.

The annual commencement exercises of the Dental Department of the Harvard University were held in connection with those of the other departments of that institution on June 29th, 1892, in Sander's Hall, Cambridge, Mass.

The number of matriculates for the session was forty-nine.

The degree of D.D.S. was conferred upon the following graduates by the President of the University, Chas. W. Elliott, L.L.D.:

NAME.  
Edward Stanley Bryant  
Allen Stanley Burnham  
Carol Edward Bugbee Chase  
Willard Eben Curtice  
Kirk Addison Davenport, D.D.S  
Ernest Frederick Gabell  
Theodore Hallett

NAME.  
Herbert Frederick Hill  
Albert Edward Hulme  
Richard Carol Moritz  
Henry Snow Parsons  
Henry Robinson Peach  
Henry Edward Rose  
Nathan Prindle Wyllie

Total 14.

## College of Dental Surgery of the University of Michigan.

The seventeenth annual commencement of this department was held in University Hall, Ann Arbor, Thursday, June 30th, 1892.

The number of matriculates for the session was one hundred and eighty-four.

The annual commencement oration was delivered by Justin Winsor, L.L.D., of Harvard University.

The degree of D.D.S. was conferred on the following candidates by the President of the University, James B. Angell, L.L.D.:

### NAME.

Burt Abell  
 Samuel Howard Arthur  
 Harry Howard Avery  
 Harry Park Ball  
 Walter Joel Bell  
 Charles Lee Blunt  
 Herbert Warren Bovee  
 Charles Edward Burchfield  
 Charles Sylvester Chadwick  
 Timothy Spencer Childs  
 Thomas Coleman, D.D.S.,  
     Royal College of Dental Surgeons  
 Eli Mahlon Conrad  
 Oscar Willmott Daly, D.D.S.,  
     Royal College of Dental Surgeons  
 Archibald Warren Diack  
 George Dilworth  
 Elmer C. Goldthorp  
 Allison William Haidle  
 Charles William Hall  
 Henry James Harvey  
 May Weston

### NAME.

Thomas Ebenezer Howson  
 Osgood Frank Ingalls  
 Vida Annette Latham  
 Ben. Hubbard Lee  
 Frank P. Martin  
 James Andrew Milliken, D.D.S.,  
     University of Pennsylvania  
 Henry Milling  
 John Albert Moore  
 William James Mummery  
 William Edward Prather, D.D.S.,  
     University of Maryland  
 Frank S. Prettyman  
 Ellen Dennison Searle  
 Edward Douglass Slawson  
 Joseph Allen Snyder  
 Edward Bartlett Spalding  
 Carrie Marsden Stewart  
 George Ernest Tribby  
 Anthony Van Kammen  
 Austin Smith Watrous  
     Total 39.

## Howard University—Dental Department.

The annual commencement exercises of The Dental Department of Howard University, were held at the Congregational Church, Washington, D. C., on Wednesday evening, April 13, 1892.

The annual address was delivered by Prof. D. S. Lamb.

The number of matriculates for the session was ten.

The degree of D.D.S. was conferred on the following graduates by Rev. J. Eames Rankin, D.D., LL.D., President of the Board of Trustees:

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| NAME.                  | RESIDENCE.    |
|------------------------|---------------|
| Andrew Gwathney.....   | Virginia      |
| Albert S. Johnson..... | New York      |
| John McDonald.....     | P. Ed. Island |
| Total 3.               |               |

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### University of Minnesota—Dental Department.

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The annual commencement exercises of the Dental Department were held in connection with those of the other departments of the University of Minnesota, on Thursday, June 2nd, 1892.

The degree of Doctor of Dental Surgery was conferred upon the following by Cyrus Northrop, L. L. D., President of the University: Frank W. Force, Miland A. Knapp, James W. Paul, Thomas F. Williams.

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## EDITORIAL.

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### Washington State Dental Society.

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The fifth annual meeting of the Washington State Dental Society was held at Seattle, May 5th, 6th and 7th, 1892. Quite a large number were in attendance and much good work done. An interesting programme had been prepared and circulated to the profession. The following officers were elected for the ensuing year: President, Geo. B. Hayes, of Tacoma; First Vice-President, W. E. Burkhart, of Tacoma; Second Vice-President, P. A. Purdy, of Seattle; Secretary, F. P. Hicks, of Tacoma; Treasurer, B. S. Scott, of Ellensburg. The next meeting will be held at Olympia, May, 1893. A special meeting will be called in the autumn to consider and take action, if need be, upon an amendment to the present State dental law.

The organization of dental societies in the new States of our Union speaks well for the future of the profession. Nearly all the States and territories now have such organizations, and we trust the remaining few will not be slow to organize and have their State societies.

THE profession of Tacoma has its city dental society which has been in operation for three of four years, and is doing most excellent work. In this body the utmost good-fellowship prevails and much is being done for the progress of the profession in that city by this means. The regular meetings are held monthly in rooms arranged expressly for their use. A very creditable museum has been secured, and especially so for so young a society. This is an example to many older and larger societies which they would do well to follow. We would suggest to the members, however, that they do not rest satisfied simply with building up a good museum, but secure a library as well; a good library for a dental society is equally if not more valuable than a museum. Long live Tacoma Dental Society.

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### **Sterilization of Metallic Instruments.**

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After cleaning by the brush and unbleached linen, the instruments are sterilized, either by steam, hot air, or boiling water. The proceeding recommended as the most simple, is, first to brush with soap and water, then boil from ten to fifteen minutes in a one-per-cent. solution of carbonate of soda; fifty per cent. more soda should be added if the water is hard. After cooling, and during the operation, the instruments are placed in boiled water containing one-half per cent. each of carbonate of soda and carbolic acid.

After operation, the instruments are first washed in pure cold water then immersed and brushed vigorously in a one-per-cent. solution of soda to which soap has been added; then rinse and finally polish with a polishing stone and alcohol, or with a bit of chamois skin. Lastly, wash with a solution of carbonate of soda and carefully dry.

The brushes are sterilized by boiling in the soda solution for twenty or thirty minutes, and are kept immersed in a one-half-per-cent. solution of corrosive sublimate.—*Exchange.*

# THE DENTAL REGISTER.

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[No. 9.

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## COMMUNICATIONS.

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### Infection.

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BY H. I. AMBLER, D.D.S., M.D., CLEVELAND, O.

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Read before the Northern Ohio Dental Society, Cleveland, May, 1892.

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The paper which I present for your consideration consists of a few thoughts on Infection by leading thinkers.

The science of bacteriology has so grown and developed within the past few years as to reach with almost equal importance the domains of medicine and surgery, and to touch most of the therapeutical questions involved in the treatment of medical and surgical affections. It has an important bearing on the prevention and treatment of disease, while it has a connection, also, with the period of convalescence. Bacteria as a cause of disease, is taken for granted, and in the mouth their growth is rapid, infectious varieties have been found here and they are easily propagated; temperature, air, water and food, give them the very best opportunity for flourishing. There are over one hundred different species present at one time or another in the human mouth, but some of them do no harm. In two days a bacterium will multiply to the almost incredible number of 281,500,000,000, and it will require 636,000,000 to weigh one gramme. Two hundred years ago Leeuwenhoek described and illustrated a germ, spiral in form, which he found in the mouth, the entire group was classed under the term microbe, and he said they could not penetrate the dentine, except so far as it had been softened by some means.

Pathogenic organisms are found in putrescible matter, and also have power to attack living tissues; these forms, including the pyogenic bacteria, are of great importance to dentists. Non-pathogenic organisms can only live and grow in dead and dying matter. When the system is in a debilitated condition these germs plant themselves and grow most rapidly. At times it is not absolutely necessary to have an abraded mucous surface in order to permit of infection. The changes of putrefaction are dependent upon a living organism and a nidus for its life; substances interfering with the organisms causing these changes are termed antiseptics. Suppuration is one of the phenomena attending the efforts of certain germs to invade the tissues; prevent invasion, and you prevent suppuration, and disinfection is any means put into use for the destruction of these germs. Antiseptic surgery was started on the foundation established by Pasteur, that germ-laden air is directly instrumental in causing putrefaction and the fundamental principle of modern surgery is antiseptis. Fracture of the jaw with penetration of the soft tissues, extraction of teeth, gum-lancing, dead pulps, ulcers, abscesses, broken teeth and poorly fitting plates present opportunities for infection, but we do not always find infection following such injuries; if the bacteria are scarce, the repair cells are victorious and no disease ensues. The chances of infection from any cause whatever should always be thought of and precautions used. The ear, nose, throat, parotid gland and antrum, may become seats of infection which will more or less affect the mouth, or infection of the antrum may take place from the nose, or from inflammation of the carious or abscessed teeth. I impress it on patients to keep the mouth in an aseptic condition by the use of the brush and antiseptic washes, such as diluted listerine or peroxide of hydrogen which are germicides. In manipulations be as cleanly as possible, this includes thoroughly cleansing the hands and instruments with antiseptics. It has been demonstrated that infectious germs are present on the hands and under the nails, but thorough washing with soap and brush will remove all easily detachable epithelial germs, after which rinse in the following: one dram bichloride of mercury, one ounce of alcohol

mixed; one-half of a teaspoonful of this mixture to one pint of water makes about one of mercury to 2,000 water; this can be further diluted if it does not agree with the hands, as some claim that 1 to 5,000 is of sufficient strength. Grosvenor and Richards manufacture tablets composed of equal parts of bichloride of mercury and chloride of ammonium; one of these dissolved in a pint of water makes a 1 to 1,000 solution, but the strength can be altered at will; clean the nails before using either preparation, and afterwards rinse the hands in pure water. In abdominal operations the hands are immersed in a saturated solution of permanganate of potash until they are mahogany red, then transferred to a saturated solution of oxalic acid until they become pink, then washed in warm sterilized water, this renders them completely aseptic. Instruments can be sterilized in boiling water containing five per cent. of carbolic acid, or in the bichloride mixture; but if the latter is used great care must be taken or they will become rusty; baking them for a few moments at a temperature of  $300^{\circ}$  in a gas stove is highly recommended; moist heat applied for twenty minutes accomplishes sterilization, and it can be successfully applied by Arnold's steam sterilizer. Instruments are not apt to lose polish or rust unless cooled before wiping dry. Organic matter yields last to the destructive influence of micro-organisms, and where softened dentine is left over a pulp and the cavity filled we may cover in microbes and they may produce products which will destroy the pulp, thus producing infection. In such cases do not use any medicament which will produce coagulation, but desiccate the softened dentine with warm air and apply oil of cassia which is diffusible, penetrating and will destroy the microbes; some prefer oil of cassia and oil of cloves, equal parts; myrtol is also recommended because it is non-irritating and a powerful antiseptic; lysol, which is soluble in water, is used for the same purpose. A decoction of cinnamon ought to be taken freely by persons living in places affected by typhoid or cholera. In the oldest medical prescriptions for infectious diseases, cinnamon was a prominent ingredient, and it was in great request during the plague of London; and it is claimed by many that oil of cassia will destroy microbes as effect-

ually and rapidly as bichloride of mercury. Pyæmia is infectious, for the products poured out by the micrococci, which are from  $\frac{1}{100000}$  to  $\frac{1}{250000}$  of an inch in diameter, poison the blood and the absorption and dissemination of the poison give rise to general disease and also abscess. While in his office Dr. E. accidentally inoculated himself and in a short time had an abscess large as his hand. Dr. B. unfortunately cut his finger with an instrument he had been using in a decayed tooth, the result was pyæmia, which incapacitated him for several weeks. We will surely be more successful in the treatment of lesions of the mouth and teeth by careful attention to antisepsis. Where the saliva is in a septic condition, caused by pyogenic bacteria from alveolar abscess, it can be rendered inert by using a solution of one part of peroxide of hydrogen and two parts of water; a spoonful held in the mouth for five minutes will destroy a large number of germs and oxidize minute particles of dead organic matter which have not been removed by floss and brush. Infection of the general system may be produced by a diseased condition of the mouth, as the microbes which produce pneumonia, erysipela, and septicæmia, have been found in the oral cavity. Great numbers of germs are constantly being swallowed with the saliva, and some of them are ready to do us harm. The cleaner the mouth is kept the more slowly will microbes develop. Tooth-powders and tooth-washes should be strongly impregnated with oil of cassia which will act as a prophylactic.

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### Diagnosis.

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BY J. R. BELL, D.D.S., CLEVELAND, O.

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Read before the Northern Ohio Dental Society, Cleveland, May, 1892.

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There are things which we do daily that we know why and how to do, which if we were called upon for an explanation, would find ourselves deficient in language to express, and this, gentlemen, is the feeling we have in imparting our ideas upon the subject of Diagnosis.

We have heard of men, of whom it is said, "could tell all and even more than they knew; and others, who knew more than they could tell" we beg to be classed with the latter in this one instance, at least.

Diagnosis, the art or science of signs or symptoms, by which one disease is distinguished from another. The definition covers such a scope, even in the abnormal conditions with which we have to deal, that we make no effort to surround it, but only present our art of discerning symptoms of various affections most common in our specialty. There are stages of symptoms in and remote from the organs with which we have to deal, which make it (until the disease develops) impossible to safely pronounce the same, therefore, a reserved opinion is advisable, but as it is how we distinguish and not what we should or should not do with a case that we are to talk, we proceed; but first allow us to take advantage of the opportunity to say, that correct diagnosis is the foundation principle upon which success depends. Then our pathology, sanitary laws, hygiene, etc., are merely accompaniments to this. Then our intuitive vision, which is capable of knowing without education or reasoning, fits us for action, but exclude judgment and education, and man can act only mechanically or by comparison. Now, let us talk about some of the important affections indicated in the irritation of first dentition, together with inflammation, disposition disturbed, rise of temperature, thirst, and if relief is not afforded, diarrhoea, and convulsions. In abnormal dentition the same symptoms, with more tense, shining gums, more fever with skin eruptions.

*Convulsions of Dentition.*—Premonitory symptoms are changeable temper, unusual luster of the eyes, indifference to take food, twitching of facial muscles, biting of teeth, when paroxysms are indicated the face will turn red or purple, stiffening of the body, respiration suspended, unconsciousness, protrusion of tongue, rapid intermittent pulse.

*Inflammation of the periodontal membrane* is demonstrated by uneasiness and fullness, at first relief is experienced by occlusion of teeth, chronic form pressure causes dull pain, tooth is raised in its socket and meets the opposing teeth in advance of all others,

slightly loosened, indicating plainly a thickening membrane, the gum margin is a high color, but there are often exceptions to this rule, in tissue more easily broken down from diathesis, more of course will be found involved in proportion to diathesis affection, time, etc. In subjects of this nature we learn to anticipate, if inflammation does not yield to treatment, either ulceration or alveolar abscess.

In modified symptoms of this affection, intermittent pain, tooth gradually becomes less of a fixture, indicating detachment of peridental membrane by engorged and broken down blood vessels. Continued symptoms indicate either local or systemic disturbances. If allowed to progress, devitalization of pulp will naturally occur.

To locate peridental inflammation on teeth of one or more roots, gentle pressure applied at different angles will usually cause slight pain and show the disease to be upon the side from which the pressure is produced.

*Alveolar Abscess.*—At first patient will explain having had pain constantly. Then increased by each pulsation, from a varied length of time, say two or three days, a sense of swelling over diseased root, later if the tissues break down more rapidly than the system absorbs the pus and carries it off, there will be a pointing and discharge, at which time the above symptoms become less pronounced, and are soon unnoticed. During the development and until relief is obtained, there are usually constitutional symptoms, offensive breath, rise in temperature, thirst, headache, and foul tongue. Throbbing pain denotes pus formation.

*In chronic form.*—The above symptoms become less pronounced and the discharge of a small quantity of pus, either coming from the mouth of the fistula or it can be made to escape by pressure upon the neck of the sinus.

To ascertain the origin of an elastic fluctuating swelling on any part of the face or neck, draw the fingers gently to, and from the terminus of the swelling and the tooth indicating the cause, when pain will be produced by strangulation of blood and pressure upon nerves through the vessels associated, and if there is a

blind abscess the desired effect will be obtained by changing position of disorganized blood corpuscles.

The indications of an abscess threatening to point externally, are understood by red, shining, distended skin, thin and scaly surface from which epidermis may be peeled off.

*Abscess or disease of antrum* is considered the most difficult to diagnose of any disease with which we have to deal; this is true only in imagination, for when the anatomy of the face and the frequent communication of the roots of the teeth and this cavity are understood, together with the symptoms that follow with variation of course, the diagnosis is simple.

The quantity of pus and pain is intermittent, according to the normal or depleted state of the general system. Constitutional disturbance is one of the strongest proofs, and if not visible should be inquired into. Cheek will be found hot, slightly swollen, with frequent sharp pains which increase in proportion to above symptoms, until the pain becomes of a throbbing character and may produce rigors and fever peculiar to suppuration. The molar teeth on the affected side described as elongated from depression, which may prevent proper occlusion, the palate instead of being concave becomes convex. The nostril becomes encroached upon, and the floor of the orbit sometimes pushed up in such a way as to partially force the eye from its socket, viz., in protracted cases, and the eyesight may become affected by stretching the optic nerve; about this stage of the disease either the effects of "blood poisoning" will appear, or some sinus discovered through which the pus can escape, either into the nose, through the floor of the antrum, around the necks of the teeth, or it may be found first discharging into the eye, or through the cheek. When if the fistula is large enough to afford free escape of the pus, the pain will cease until the cavity fills again.

*Alveolar ulceration* may be distinguished by purulent matter oozing out around the necks of the affected tooth or teeth, or through the gum. In regular abscess new tissue is constantly being formed, while in ulceration normal tissue is continually being disorganized. We will find a watery discharge, translu-

cent, and oftentimes odorless, while in case of an abscess, the discharge is opaque and generally offensive. We find too little pain or swelling in ulceration; this is the most dangerous form of disease with which we have to do, because of the possibility of the ulcer becoming malignant, and the liability of its poisoning the operator or his succeeding patients for want of thorough antiseptic condition of both hands and instruments.

In its chronic form we know that the alveolus and pericementum adjacent to the disease is being slowly carried off, and we may naturally expect calcareous deposits upon the roots of teeth not yielding kindly to treatment.

*Necrosed Alveolus* is clearly understood when the gum is dark purple and the discharge is offensive, gums soft, bleed at the slightest touch, and appear loose from the bone beneath.

*Mercurial Salivation*.—In a mild form we find simply a red margin of the gum, which very soon, however, becomes soft and tender to pressure; then, too, there is always the metallic taste described and the fetor of the breath. In more marked cases of poisoning, the saliva becomes profuse and the patient has difficulty in controlling it. The metallic taste, soreness, stiffness of the jaws, increase in proportion. In this stage sloughing of the gums will commence.

*Syphilitic Ulcers*.—The whole gum surface is red and swollen, with ulcerated margins often exposing the necks of the teeth, although they may not be found loosened as in other inflammatory conditions there is usually a bloody discharge from the gum margins. We should readily understand these symptoms, because of the danger of contagion and transmission.

*Scrofula*.—We find it more marked in the young subjects, and although there are exceptions, there is always a tendency, and it is a pretty sure sign of scrofulous diathesis, where the lymphatic glands are found enlarged; this sign, together with more or less skin eruptions, are unmistakable characteristics of scrofula.

*Tumor of the upper jaw* is generally indicated by a gradually increasing prominence of the cheek, many times involves nostril and mouth and closes the eye.

*A malignant tumor of the jaws is almost invariably of rapid growth, which is hard, invades surrounding tissues with a tendency to fungate like mushrooms.*

*There are two kinds of Cysts, called Dentigerous.*—This word is derived from the two Latin words, “dens,” a tooth, and “gero,” to carry, to bear. First, those found upon the roots of well developed teeth; second, those more frequently connected with unerupted or imperfectly developed teeth, and they are common to either jaw. There is disfigurement, a sense of weight and contraction of affected parts, frequently constitutional disturbance.

HEATH: in speaking of the clinical history of cysts connected with the teeth, describes them as painless, expansion of the alveolus of either jaw, but more frequently of the upper, with crackling of the bone on pressure and the ultimate absorption of the same.

In the one feature of his diagnosis we differ, viz., in the absence of pain. A cyst, he says, when distended presents a bluish appearance, and when very large gives distinct fluctuation.

*An unerupted or impacted tooth is indicated by a hard tumor like growth over the alveolar ridge, frequently, if on the upper jaw, extending along the plane of the palate bone, on the surface of the maxilla, and in the shape of corresponding tooth.*

*Necrosis, or death of jaw bone, is similar in its first stages to peridontitis, but later there is a vast difference; we find the gum thickened; tumid and very red, with pus oozing from the borders around the teeth, with recession of the same.*

*Hypertrophy of the gums is found mostly among two classes, who are extremes in habit; one, seldom if ever brush or pick their teeth; the other, clean theirs and produce the above affection through ignorance, by the use of tooth-powder, advised and sold to the victim by dentist or druggist.*

“Where there’s a penny to be gained, its unwise to truthfully advise.”

Pardon our divergence from the subject. The temptation was too great for us to refrain from expressing our indignation for this injurious practice of advising powder as a dentifrice.

We distinguish hypertrophy readily. The gums are of a dark color, and increase so as to partially or fully cover the teeth; accompanying these symptoms are disagreeable breath and increase of saliva.

*Alveolar Pyorrhæa.*—The symptoms approximate those of syphilis, mercurial salivation or hypertrophy; it is distinguished from other affections by extreme sensitiveness of gums, which have either a polished glossy-like surface, or knotty and rough. In simple form there is merely a congested appearance of the gum, but in its chronic state teeth are loose from gum margins, in which pockets are formed and a wasting away of the alveolar processes; later the only attachment is a tough ligamentous connection from a portion of the root, which seems to strengthen by use of the tooth, but later gives way altogether unless local systemic and preventive means are adopted.

*Irritation of the Dental Pulp.*—Like general nervous irritation, we must look to causes arising from organs affected by other disease, and so on through a chain of troubles, very remote oftentimes from the one in which the greatest pain has finally settled.

If the general health is impaired through sickness, excessive sedentary labor, lack of nutrition, gestation, lactation, anæmic or climatic condition, the cause and effect should be noted and our actions governed accordingly.

Sex, age, temperament, diathesis and habit, separately and collectively, demand careful but necessarily only a passing glance to determine the possibilities in cases of this and other similar affections as they come under our care. In simple irritation the first sensation is consciousness or an unnatural feeling in some of the teeth upon the affected side, the person himself and we too are puzzled to locate it carefully at first, as the pain becomes of a boring or gnawing character, disturbing mastication and rest, it becomes acute, then the separate organ is singled out, but neighboring teeth will also be disturbed sympathetically. When this stage arrives the pain in the tooth becomes very distinct, others are unnoticed, except at intervals when there will be a remission, then it may recur instantly, and especially when the person as-

sumes a recumbent position. We are doubtful if the pulp can be prevented, indefinitely, from devitalization when this stage is reached.

*Chronic inflammation of the dental pulp* is distinguished from irritation and acute form, because the pain is more wandering, like neuralgia, and is excited by changes of temperature, especially from dry to wet, and is also of an intermittent character.

*A fungous growth on the pulp* is like a small vascular tumor, but there are exceptions, when it may be found as large as a navy bean. Its diagnosis is of little consequence as the entire pulp has to be destroyed, and usually that, together with the filling of the tooth, is simple.

*Diagnosis of ossification of the pulp* is difficult, but is important, and should be distinguished from other affections producing symptoms nearly in common, because different means are necessary to accomplish the desired end. The pain is like that of a wound healing by first intention, there is commonly a gnawing sensation, causing consciousness that some tooth on the affected side is not right. It may affect the side of the head or face, but severe pain is not constant. The affected tooth remains natural in color and free from soreness for days and even weeks in some instances, until it is pronounced a nuisance. Again we find partial ossification in carious teeth in which there has been no disturbance.

We find ossification of the pulp in the youth of old age, viz., in the neighborhood of the fiftieth year, when from abrasion of the teeth and ossification of the pulp they either require crowns or gold screws and tips, then it is necessary to determine their vitality. Heat a blunt instrument to a degree just endurable upon the finger nail, now quickly apply to the tooth in question, when there will be a response by a demonstration of consciousness or complete insensibility.

*Dentine abnormally sensitive*, or so much as to require treatment preparatory to permanent restoration, is indicated by general debility of the system, white chalky or leathery disintegration, susceptible to thermal change, vitiated saliva, showing

acid reaction, gum margins irritated from white pasty deposit, want of use, but showing absence of care and nourishment.

*Abrasion of the teeth* is first indicated by a polished, glassy-like occluding surface, in the more advanced stage the crown of the tooth becomes concave, showing the form of the pulp-chamber, which is itself partially calcified.

*In dental exostosis* the symptoms are very like those we meet with in ossification of the pulp, continued, however, the character of the trouble is distinguished, because of the prominence on the plane of the alveolar ridge.

*Defects of Tooth Structure.*—Anomalies of this character were formerly denominated atrophy, but it does not apply, from the fact that these defects so often seen are from faulty formation of structure and not wasting after eruption. In examination of these defects their character, progression, and the age, and the teeth in which they are found, suggest not only methods for restoration, but the time the disturbance was present. For instance, the spots, grooves or pits, in any class of teeth, denote lack of proper nourishment through disease one or two years prior to its eruption. Example: Six year molar four to five years; incisors, sixth or seventh, and so on.

*In syphilitic teeth* the cutting edges are notched, cuspids are like pegs usually dark color and soft consistence.

Mr. Milner Fothergill says: "There is but little doubt but that the configuration of the teeth in gout has a distinct value." The peculiar characteristics are always pronounced. The teeth are short and thick, with heavy shoulders upon the lingual side, with encircling grooves, which give the teeth a step-like appearance. The gums are light and thin and retracted. The center of the tooth is dark color.

Many cases of atrophied teeth are the result of severe whooping cough. The enamel will be found soft and the dentine oftentimes greenish color.

*Puberty affect*, while not a disease, retards the growth and quality of the unerupted teeth, third molars suffer.

Nasal catarrh of our climate tends to produce, defects in the development of the teeth. White spots are signs by which we distinguish this class.

*Measles or Measles tooth* are teeth usually centrals with exfoliation of tooth germs, eroded edges, vertical grooved, teeth are thin and narrow.

*The Malaria Tooth*.—If this term is allowed, is soft, rough, with spongy gums inclined to inflammation.

*Rheumatic teeth* are hard, flinty, checked edges, yellow and firmly planted.

*Scrofula*.—The teeth in subjects so affected have soft enamel, pinkish, muddy, opaque color, difficult to diagnose them from syphilitic teeth.

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## The Use of Gutta-Percha as a Root-Canal Filling.

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BY FOREST G. EDDY, D.M.D., PROVIDENCE, R. I.

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I bring before the society for discussion to-night my experience with gutta-percha as a filling for root-canals. I claim no originality, but rather present my gleanings from the operations of those in our profession who have made a success in the filling of root-canals and the saving of the natural teeth in a healthy condition. Some one has said: "Success in preserving devitalized teeth depends almost solely upon the individual skill of the operator, and possibly somewhat upon the materials used." To me the material used is a marked factor in relation to success.

We, who live in malarious districts, are beset in our practice with roots of teeth difficult of access, with their flattened and tortuous canals filled with pulps exposed, disintegrating and suppurating. To overcome these troublesome members, and bring them under subjection in as short a time as possible, is no slight strain upon the already overtaxed nerves of the busy dentist.

Here you have the most common methods: Root-canals with a drilled vent—a discharging sewer. Root-canals with pulp removed and not filled—a catch-basin for sewage. Again, canals filled with cotton, with iodoform, wood, lead, tin, oxychloride of

zinc, gold and gutta-percha. Skilled operators have made a success in the use of all these methods and materials in filling the canals of teeth.

The material that is simple in its manipulation, the method that may be acquired by the majority, should rank first.

Gutta-percha seems paramount in value. The nature of this substance and its properties have been well described to us by our associate, Dr. Meriam—its non-elasticity; its wood-like hardness and toughness when cold; its being soft and easily moulded at high temperatures; its insolubility in water, alcohol, dilute acids and alkalies; its ready solubility in bisulphide of carbon, essential oils, and chloroform. I think it advantageous to use it in both conditions, hard and in solution, in the filling and closing of canals: hard, in the form of small pellets and cones; soft, dissolved in chloroform, which is the method in common use. Then to this solution of gutta-percha—"chloro-percha," as we call it—I add an equal bulk of oil of eucalyptus and oil of cassia,—the essential oils holding the gutta-percha in solution after the chloroform has to some extent evaporated. You all know how difficult it is to carry chloro-percha into canals from the rapid evaporation of the chloroform, leaving the gutta-percha sticking to the instrument rather than to the walls of the cavity.

A prominent, an essential factor to success is that the root be in an aseptic condition. Operators differ in obtaining this result, as they do in the use of different materials in closing the apical foramen and filling the canals.

Dr. H. Storer How says: "All methods are defective in which the operator does not know that he has closed the apical foramen."

The antiseptics of to-day are familiar, and the list is constantly increasing. The foremost writers upon antiseptics now advocate abolishing, as far as possible, all escharotics and coagulants in the treatment of septic conditions of root-canals. No antiseptic in use by the dentist answers these questions so well as peroxide of hydrogen and the essential oils. They are non-escharotic, non-toxic,—yet antiseptic and stimulant; the manner of their use is simple and positive.

In case of immediate extirpation of the pulp by means of forcibly inserting a plug of wood,—this being preceded by an injection of cocaine, or the patient being under the influence of nitrous oxide gas,—I at once wash the cavity with hot water, to stop the hemorrhage; dry out the canal with cone of bibulous paper, in the manner described by Dr. Smith Dodge, of New York; churn out the canal with peroxide of hydrogen, instead of carbolic acid, as an antiseptic; then re-dry the canal and fill with solution of gutta-percha in essential oils, which is easily worked to the apex and adheres to the walls.

Into the canal filled with the solution, carry a small piece of warm gutta-percha, gently and firmly, to the apex, following with the hard cone. The surplus solution will be forced out, and the hard cone of gutta-percha will be cemented to the walls of the canal. It will be seen that I differ here from Dr. How, if I may be permitted to again quote from his article, in which he says: "The fluid or soft plastic methods are defective, because it is only supposed, but not known, that the foramen is, in fact, tightly closed, to say nothing of the mischief likely to follow the probable forcing of the solution through the foramen."

If the pulp be in a suppurative and disintegrating condition, we remove the debris, using the peroxide of hydrogen from time to time to clean the cavity as we proceed, and dress the root with fibre of cotton or silk, saturated with oil of cassia or other essential oils.

When the root is in a healthy condition, fill with gutta-percha in the manner before described.

The root having a fistulous opening, the canal is cleared of debris, and filled with peroxide of hydrogen. By a piece of soft unvulcanized rubber and a blunt instrument used as a piston, the peroxide is forced through the canal and out of the fistulous opening, the whole tract being left in an aseptic condition. After again drying the canal, the solution of gutta-percha is forced in similar manner through the fistulous opening, closing the canal, as before, with gutta-percha.

Frequently, after filling the canal by some of the old methods, a slight discharge would continue from the fistulous tract; but

never have I had a case that would not yield to the above treatment. My theory is that the old sac at the apex of the root is distended and filled with the solution of gutta-percha, and this remains encysted. Some inflammation often results from forcing the solution of gutta-percha through the fistulous tract, but in a day or two at most it usually subsides.

In the treatment of root-canals I have used the peroxide of hydrogen for eight years faithfully, it being first brought to my attention by Dr. Chittenden, of Madison, Wis. I have used gutta-percha in different and various forms for about the same length of time.

From working upon and refilling canals that have had cotton, oxychloride of zinc, wood and metallic stoppings, I am led to think of gutta-percha as occupying the foremost position in the closing of roots of teeth that are devitalized.

I have taken the liberty, and I know you will allow it to me, to bring a few extracts from the records of work done in my office upon devitalized teeth.

From November 1, 1890, to November 1, 1891, a period of twelve months, I find the canals of one hundred and fifty-two teeth successfully filled after the manner described. To classify them a little more thoroughly, there were fifty-seven molars, fifty-seven bicuspid, eight cuspids, seventeen lateral, and thirteen central incisors. During the same length of time but two were removed as complete failures. Both of these were most faithfully operated upon, and I consider their loss and failure due to the low vitality of the patients.

I am led to advocate this method because the antiseptics as used are not coagulants, and are not escharotic; because of their non-irritating character in relation to soft tissues; and because of their pleasant odor in the office. No creolin, creosote, or iodoform is used in my office.

## Syncope and Asphyxia.

BY G. H. WILSON, D.D.S., CLEVELAND, O.

Read before the Northern Ohio Dental Society, Cleveland, May, 1892.

There are three permanent causes of death or modes by which a human creature ceases to exist. While death may be said to be from any one of these three primary causes it is usually complicated and combines any two, or all three of the phenomena.

The causes are associated with the three chief vital organs of the body; the heart, lungs and brain. Death beginning at the heart is said to be syncope; at the lungs, asphyxia; at the brain, coma.

We may have any one or all of these conditions without death, but when we consider that death must come by one or more of these expressions of dissolution we are the better able to comprehend their significance.

The phenomena known as syncope we will define as failure in the action of the heart, which is speedily followed by symptoms resulting from anæmia of the nerve centres, and these by failing pulmonary functions.

The chief predisposing causes of syncope are, in the female sex, a nervous temperament, weakness, an impoverished condition of the blood and organic structural deficiencies.

The exciting causes are numerous; the more important one, want of sufficient blood in the cavities of the heart, as from excessive hemorrhage or sudden removal of pressure from any of the great blood vessels.

Another cause is an inadequate supply of blood to the cardiac walls, as from obstruction of the coronary arteries; or a supply of impure blood, as in low fevers, or a hot or crowded room.

Another cause is partial or complete paralysis of the muscular tissue of the heart, either from organic changes or from

nervous disturbance which may be either centric, reflex, or intrinsic. The last we will name is continued spasmodic contraction of the heart.

Syncope may come on quite suddenly or cause instant death, but usually there are premonitory symptoms before actual insensibility occurs.

The premonitory symptoms are giddiness, trembling, with sinking in the epigastrium; nausea and sometimes vomiting; pallor, with drawn features; chilliness and shivering with clammy perspiration; a very rapid and weak pulse, though the large arteries may throb; marked disturbances of the senses of sight and hearing.

Asphyxia we define as suffocation or lack of oxygenation of the blood from whatever cause. To us, as dentists, this condition is far more circumscribed than syncope. The causes are closure of the glottis, larynx or trachea, either from a foreign body or spasmodic action.

Another cause is a lack of free oxygen, whether by forcible means or substituting a gas destitute of or incapable of supplying the necessary element to the lung tissue.

Still another cause is through the nervous system whether centric, reflex or intrinsic. Last, insufficient blood supply.

We will recognize this phenomenon by the two clinical symptoms, impeded or suspended respiration, and the color of the surface of the body, which will range from a slight turgidity of the mucous membranes to a decided blue-black of the skin.

Coma is characterized by a stupor or insensibility which is soon followed by disturbances of respiration and circulation. In practice we are liable to have all of these conditions presented. Syncope is most common and ordinarily the least dangerous. The danger to the patient and our responsibility will depend upon the conditions under which the patient fainted. If the dentist has not administered a drug or anæsthetic he will not be held responsible should death supervene; but under such conditions there is little danger of a fatal result, though possible.

When the exciting cause is mental, of whatever nature, or from exhaustion, the treatment will be to do what nature always

attempts to do, that is, to cause the patient to assume a recumbent position; give free use to the muscles of respiration, apply cold water to the face and chest, volatile stimulants to the nostrils and stimulants to the mouth if the patient is able to receive them. The diffusible ammoniacal preparations are to be preferred. In the domain of anæsthesia we will have these three conditions mostly to contend with; here they are especially associated with danger and demand our intelligent attention.

Dr. Lyman makes this statement in his work on Anæsthesia: "A dentist's first choice should be nitrous oxide; second and last, sulphuric ether; never chloroform." As there are very few who give ether to-day without the presence of a physician we will place this last article with chloroform, as far as this paper is concerned, and confine ourselves to the one remaining general anæsthetic, nitrous oxide gas.

Clinical experience has now demonstrated that the gas is not only the safest but in the hands of an ordinarily intelligent and careful dentist is practically safe. While there are records of a number of deaths associated with nitrous oxide gas Prof. Guilford says he has yet to learn of a single fatal case from the liquid gas. That there is danger in its use is evident from the large number of men who have abandoned it because of the unfavorable symptoms they have observed. And no one with much experience in its administration will have escaped these unfavorable cases.

I believe we are justified in saying that syncope is not the effect of nitrous oxide, but it is generally accepted that it is incidentally present and is dangerous in proportion as the patient is more or less filled with the gas, thus preventing its elimination.

Asphyxia is the one condition we have to guard against in the administration of gas. It is quite generally conceded that gas is a true anæsthetic and produces its effects by direct action upon the nerve centres. That super-oxidation does not take place at all, and that asphyxia is only incidental; but where there is a good respiratory organization and the nervous system is not unfavorably acted upon by outside influences there will be sufficient oxygen retained in the system to supply the wants of nature, and nature will tolerate the presence of the inert gas.

Should the face indicate the presence of an undue amount of carbonic acid from whatever cause, it can generally be quickly corrected by removing the face piece and admitting one, two or more breaths of pure air when the undiluted gas can be admitted again with probably no further trouble.

Should respiration cease entirely and the patient become rapidly black in the face there is certainly no time to be lost. Throw the patient directly forward bringing the thorax upon the knees; this will compress both the abdomen and thorax and largely expel the contents of the lungs.

With a napkin, pliers or tenaculum draw the tongue well forward; with the finger ascertain that the fauces are well opened, then place the body in a recumbent position, observing that the head is so placed as to make the air passages as straight as possible, when, if respirations have not begun give diligent attention to artificial respiration. During this condition all volatiles, water or rubbing the extremities are useless as the nerve terminals are thoroughly anæsthetized and are not capable of responding to such stimulants. What the system *needs and must have*, is *oxygen*.

We are to-day in the midst of a craze for local anæsthesia, the active ingredient of which is cocaine. In this I believe we have a new danger to contend with. While I have not as yet seen anything written scientifically upon its effects on the system we know it has a decided toxic action, and this I believe is directly upon the nerve centres which we know as coma. Circulation and respiration only being affected because of the sedative action upon the brain. The treatment consists of active stimulation, thus assisting nature to diffuse the poison throughout the whole system thereby reducing its potency to such an extent that nature can successfully eliminate the drug.

Trusting that these few thoughts will evoke a discussion and that we shall have the results of your valuable experience and observations, I close.

## Syphilitic Disease of the Nose.

BY C. G. DARLING, M.D.

Clinical Lecturer on Oral Pathology and Surgery in the College of Dental Surgery of the University of Michigan.

A specific catarrh may begin in direct contamination of the nasal mucous membrane with syphilitic matter carried to it by means of instruments, or the uncleanly habit of picking the nose. It may be present in the secondary stage, while the nose is a common seat of tertiary lesions; it may also be the result of heredity.

When the initial sore appears in the nose there is swelling, pain, difficulty of respiration and fever. The eruption on the mucous membrane of the nose may be much the same as on the skin, or the appearance may be greatly modified by irritating secretions. Papular elevations rapidly lose their epithelium by having it degenerate into muco pus. This leaves the membrane a secreting surface of ashy color. When left to pursue their own course they spread, become cup-shaped and secrete large quantities of yellow pus. They also present a red border indicating a marked degree of congestion and favoring abundant secretion.

In the tertiary stage nodes are formed and the pressure of this adventitious tissue on the bloodvessels cuts off the blood supply, causing ulceration. This ulceration may terminate in resolution if treatment is begun early and little destruction of tissue result, or there may be marked cicatritial contraction, on account of the formation of connective tissue. When the underlying tissue or bone becomes involved it terminates in necrosis. The septum and the ethmoid bones are more commonly destroyed by ulceration than any other bones in the body.

The secondary lesions are announced by a mild coryza which gradually increases in intensity until it reaches the stage of purulent exudation. This discharge may undergo many changes but has a peculiar fetid odor, peculiar to syphilis.

Ulceration in the tertiary stage is most formidable. It first appears as a local swelling of variable size, gradually changing to a deep and ragged ulcer surrounded by a red areola. A greenish-yellow discharge covers the ulcer. The discharge may be streaked with blood, or carry with it shreds of necrosed tissue. Sometimes the secretion dries rapidly, forming hard crusts which rapidly decompose, producing a very offensive odor. The disease soon spreads to the underlying cartilage or bone and rapidly destroys it. The septum is first involved. The destruction of these bones of the nose causes the deformity to that part of the face so commonly seen in syphilitics.

When the turbinated bones are involved small pieces of bone may come away in the discharge, or may require removal. When the mucous membrane and the deeper parts begin to slough the odor is intolerable. Necrosis following gummatous affection of bone does not differ materially from other forms of necrosis. There may be new gummatous deposits about the edges of the diseased bone where the parts may be seen in every stage of change, from the first invasion to complete necrosis. This appearance is quite characteristic and most frequently observed in the skull.

The idea that mercury is responsible for these bone lesions should be received with a degree of caution. Evidence is abundant to show that untreated syphilis may present many bone lesions; on the other hand, it is shown that workers in mercury are no more liable to contract bone disease than other persons. Syphilitic necrosis may attack the maxillary bones usually beginning in the alveolar process of the superior.

First, the gums are red and swollen, gumma is formed and the teeth involved in the process are loosened. Ulceration soon takes place with a foul and offensive discharge. There is great difficulty of speech, mastication and deglutition. The teeth may be lost and a large portion of the bone destroyed. The hard palate is frequently involved, the disease beginning in a very insidious manner. A slight elevation without pain or redness or perforation may be the first sign of the disease. Fortunately for the patient only a small portion of the bone is lost; the soft parts quickly show a tendency to heal.

When proper stimulation is applied to the granulating edges the soft parts may be induced to repair the deformity, thus shutting off the nasal passage. This does away with the "nasal twang" in talking and prevents the passing of food and drink into the nasal passage. Again the result may not be so fortunate. The borders may be rapidly infiltrated and the necrosis may extend until the bones of the hard palate, the nasal bones and part of the maxilla are destroyed, producing frightful deformity. When the sequestrum has separated and the opening in the palate does not close surgical aid must be invoked, or if the damage is too great for the surgeon to repair the dentist must supply the deficiency by artificial means. Treatment must not be dropped for some time that there may be no return of the disease.

#### HEREDITARY SYPHILIS,

Sometimes called congenital or infantile syphilis. According to statistics one-third of all the children born of syphilitic parents are dead when born, and 70 to 83 in every 100 children born of syphilitic parents die some time in infancy or childhood from no other cause than syphilis. The disease may appear as early as the third week, or it may be delayed until the twelfth week of life. This period is one of great danger to life. If the child lives the manifestations of disease may wholly disappear and from this time forward the child will seem to thrive. The danger of death diminishes as the child grows older. If there be no appearance of the disease until the child is six months old we may expect that he will reach manhood.

There are dangers at every turn in the pathway of life for the child who inherits syphilis. The organs of special sense—the eye and ear—are subject to inflammations which may lead to impaired sight and hearing. The course of inherited syphilis differs from the acquired in that it has no primary stage. It never begins with a local lesion and cannot be divided into stages. Many of the lesions are similar to those found in the acquired disease, are generally symmetrical but involve larger surfaces. The nasal symptoms, usually so late in acquired syphilis, are the first to appear in the inherited disease. Early ossifi-

cation and changes in the bones are among the common lesions. Skin eruptions are also common, coming as a symmetrical erythema.

Evidences of hereditary taint will disappear under proper treatment by the time the child is sixteen years old, though some lesions have been observed long after this period if the youth be inclined to vicious habits. How much immunity inherited syphilis may exert upon the individual is hard to determine, though it is certain that it does not give full protection.

Syphilis is always transmitted as syphilis, though some writers think they can see in it scrofula, rickets and phthisis a parentage of syphilis. The duration of the disease depends much on the treatment and severity as well as the form which it may assume. Some children will present mild lesions for a few months, then become healthy again; others may have severe lesions lasting a short time, to be followed by numerous relapses. Late manifestations have not the degree of malignancy which belongs to earlier lesions.

Inherited syphilis is more chronic and varied in its course than the acquired. Lesions of the mucous membrane are numerous and extensive. There may be numerous cerebral and nervous symptoms, changes in the teeth and bones of the skull, which leave their marks for all time. How can the diagnosis of hereditary syphilis be made? While it may be important, our inquiries must be pushed with caution, not to excite suspicion. Asking the mother pointed questions might unjustly arouse a suspicion in her mind that would poison her life. The father is usually the guilty person, and can be approached with far more freedom than the mother.

When the child has reached the proper age the permanent teeth may present symptomatic lesions of the disease. Early changes may be seen in the gums and teeth that are not truly symptomatic of syphilis. A case is reported by R. W. Parker in the *Times and Gazette* as follows:

The case came under his care when the child was three weeks old, but in spite of good treatment it lived to be only two months

old. Corresponding to the place for two upper central incisors were two "gum-boils" the size of large peas; the rest of the gums were red and inflamed. When one of these "boils" was lanced a tooth dropped out.

Hutchinson, who has made extensive observations on syphilis in connection with the teeth, says:

"There are teeth, and they are seen not infrequently, so characteristic that I should feel sure in the absence of all other facts, or even in spite of them, that the possessor of such teeth must have inherited syphilis. Many cases there are where the changes are not great enough to warrant an opinion; they only lead to suspicion."

He has given the points of diagnosis so clearly that I might well give them to you. He says:

"We must not forget that the milk-teeth are never characteristically malformed. Nor ever neglect the rule that it is to the upper central incisors almost solely that we should look. The lower incisors may be malformed, but not characteristically, and this may be due to other causes than syphilis. The tooth-sac may suppurate and crown exfoliate before fairly cut. I have never witnessed the suppurative exfoliation of the upper incisors except in those who have syphilis. More common than exfoliation is caries of a peculiar form. The neck is attacked, eaten through and the crown drops off. We find these children from two to six years of age without teeth."

The uncommon symptoms he ranks as suspicious and not certain. Mistakes may easily be made in the permanent teeth. They may be dented or fluted as a result of early stomatitis. This condition may be more conspicuous than the signs of syphilis. He gives the following rules:

"All transverse markings (where they cross several teeth) are to be disregarded. All mere defects in enamel formation leading to pits or honeycombing, or irregular breakages, are to be disregarded. Foliated or wart-like projections on the teeth, with, of course, defects of enamel, although very suspicious, are untrustworthy. What we call peg-like teeth are also suspicious but not trustworthy. In looking at the test-teeth (the upper antral incisors), we must observe chiefly their size and edges."

The notch is more or less crescentic, and is accompanied by a rounding off of the angles. The tooth is almost always dwarfed both as regards its length and width. It is not flattened out as a normal incisor, but rounded and more or less pegged-shape. The enamel may be deficient in the middle of the notch. The teeth are often not properly placed, but incline towards each other or in opposite directions. They are seldom large enough to touch both their neighbors. The teeth are not imperfect in all cases of hereditary syphilis; on the contrary, they may be perfect. An ulcerating gumma of palate, which is almost conclusive proof of syphilis, has been seen when the teeth were perfect.

Mackenzie, of Baltimore, after a careful examination of one hundred and fifty infants, finds that 1st ulceration may take place in the palate, pharynx and naso-pharynx any time from the first week to the fourteenth year.

2. When eruptions are delayed the lesions of pharynx and palate are more common and persistent, being the first to draw attention to the disease.

3. Females are attacked more frequently than males.

4. Ulceration may occur at any point, but most common in the palate.

5. When seat of ulceration is posterior to the hard palate the naso-pharynx and nose are the parts invaded; when upon the palate it forms a way through the nasal cavity.

6. The next most common seats of ulceration in order of frequency are the fauces, naso-pharynx, post-pharyngeal wall, nasal fossa and septum, tongue and gums.

7. Ulceration of palate tends to necrosis of bone.

8. Tendency to necrosis exists at all times of life, but especially in early youth, when it is most destructive and less amenable to treatment.

All organs may be diseased in inherited syphilis. There may also be disease of the bones, joints and loss of hair. When the eyebrows are missing at two or three months syphilis may be suspected. When syphilis is suspected, study well your case before arriving at a diagnosis. When in doubt, recommend treatment for syphilis and carefully watch the effect.

## Crown and Bridge-Work.

BY GRANT MITCHELL, D.D.S., CANTON, O.

Read before the Northern Ohio Dental Society, Cleveland, May, 1892.

I appreciate the honor conferred on me by your committee in appointing me to a place on your programme for this meeting of the Northern Ohio Dental Association.

I feel that it is one of the greatest of privileges. It affords opportunities for learning and improvement that can be had in no other way. Points that are brought out in the discussion of one's own papers are impressed more deeply, I think, than in the casual hearing or reading the dissection of some stranger's work. And yet I am not without misgivings in availing myself of the privilege and must confess a purely selfish motive in accepting it; or, if I may inflict another man's joke, my reason for consenting to appear in this role to-day, is because I feel that I can "do the greatest good to the greatest number. And that number is notoriously No. 1."

The subject of this paper, Crown and Bridge-Work, is, to my mind, second only, in importance, to that of tooth saving. Its merit is shown in the steadily increasing popularity. Invented probably prior to 1840; lost sight of for a period; and again taken up some eight or ten years ago, since when its development has been of the healthiest possible kind. Crown and bridge-work is no longer a theory, but has grown to be a *fact*, that in the hands of skillful dentists will change our system of prosthetic dentistry.

I said my subject was *second* to that of tooth saving; let me retrace, and say that it is, indeed, an aid to, and a part of that grandest work intelligent dentistry aims to accomplish. For what nearer approach to the *perfect* tooth saver have we than a well-made and properly-fitted crown—be it cap or pivot?

There is a multitude of methods for doing this class of work, and so much has been said and written on the subject that

I feel a description of any of the methods would be but a repetition, and exceedingly superfluous, except, in so far as it may be an intimation of what has seemed to me to be good.

I have, as a general thing, but little sympathy with those *curiosities* that are occasionally presented under the caption of "Novel Bridges." They involve, usually, complications in their construction that lends nothing to their permanence or usefulness and in hands unskillful render the work more difficult of introduction, to the public, for those who are earnestly striving to do good, by reason of its liability to fail.

Right here it may be pertinent to remark that *popular* dental education is a subject occasionally discussed by members of our profession.

I know of no better way to accomplish that end than by doing work that will inspire confidence in our efforts and ability. There are comparatively few people, if any, who are willing to go to a considerable "expense" in having their teeth "fixed up" when the ghost of the work they have had done points to the ultimate loss of the teeth.

We may speculate on the feasibility of introducing text books in public schools, and like methods, but the education that educates is the one which demonstrates the ability of dentistry to save teeth—the one which changes the outlays of people from "expense" to investments in that which will profit them.

For these reasons I carefully avoid "juggling" in my practice. That is to say, I try not to go to extremes in experiment. My judgment suggests methods that seem to be improvements on those I had been using, which, if proven a success, after trial, I adopt.

The principles I employ in the construction of crowns and bridges, are old and simple. I am not tied, however, to any particular method. I use whatever my judgment suggests for the case in hand. If a Logan crown seems to meet requirements (and there are many cases where it answers most admirably), I do not hesitate to use it. I can not see that a Logan is weaker by having its pin baked into it, than a crown wherein it is cemented. I do not use them, however, back of the anterior six,

nor would I sacrifice a fairly strong lingual wall to adapt one. Preferring in such cases to make a crown after the style of the "Richmond" and save any portion of the natural tooth that may add strength and permanence to the work.

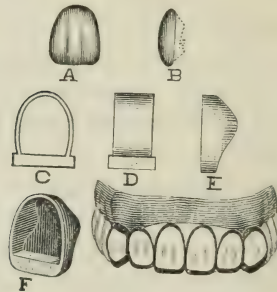
On molar teeth, except where the progress of decay renders it utterly impracticable, I use cap-crowns. They are the best, and no morbid esthetic considerations should deter us from using that which is most durable.

In peculiar cases, where a tooth is so badly decayed or abraded that a gold filling would be very unsightly, and where the nerve is still alive and healthy, and an ordinary crown operation, or even a filling would necessitate its devitalization, I have successfully crowned in a manner suggested by Dr. Dewey, of Cleveland, by beveling from the labial to lingual aspects, and making what is practically a cap crown, to which I fit a porcelain face, and mount in the same manner as a gold cap. In such a crown we sacrifice the minimum amount of tooth substance, display but little gold, and preserve the full vitality of the tooth. It makes, too, an excellent support for a bridge, and can readily be placed on bicusps, if it is desirable to avoid a display of gold.

I have here a specimen bridge, illustrating some of the methods of Dr. Hacker, of Indianapolis, that will appeal to us at least in the sense of durability. The piece I will hand to you for inspection has a cuspid crown made somewhat on the principle just described, with the difference that the porcelain facings are *cemented in* instead of being soldered to it. (I would say by way of explanation, that the spaces you will notice on the palatal side of the piece, were left so purposely in order to show how it is put together. In practice these spaces would be filled flush with solder.)

The construction of this kind of a bridge is, briefly, as follows: The roots and crowns to be used as anchorages are prepared in the usual manner. Ordinary plain teeth of suitable sizes may be selected. The pins ground off as shown in the illustration (A. B. Fig. 1). Stirrups of gold are then shaped around them; using about No. 14 or 16 gauges at the cutting or

Fig. 1.



grinding edges (C. Fig. 1). and No. 24 for hoops, Trim to contour, and solder to back of plates; making shells very heavy and thick enough to do all necessary contouring. Mount on the model and solder. Fill the shells with cement, fit in the fronts and round off the edges.

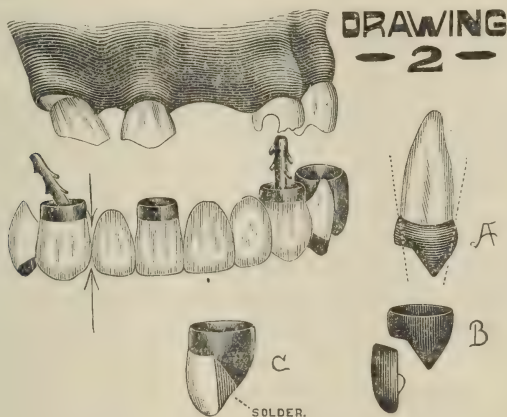
We thus have a strong bridge, on which none of the porcelains have been split or checked in soldering.

My usual practice, however, in constructing a bridge piece is that which is probably used by the majority, and is, I think, on the whole, the simplest, most reliable and certainly the most artistic.

As I made a piece, recently, that called into practice nearly all of the principles connected with this style of denture, I will describe the case.

A lady called at my office with the right superior first bicuspid, right superior lateral, left superior central and lateral and left superior first bicuspid missing. The right superior cuspid through a peculiarity of the occlusion had been tilted forward in its socket, almost closing the space occasioned by the loss of the lateral incisor. The central was abraded to more than half its length, and the left superior cuspid was decayed, and broken off near the gum. The other teeth, the first molar on the left, and second bicuspid, and first molar on the right were in fair condition.

My first step was to tap the right superior cuspid and make an application to devitalize the pulp. At the same sitting I prepared the other abutments for the bridge by grinding square the abraded edges and truing the sides of the central with corundum wheels and disks. I next beveled the labial side leaving a slight shoulder near the gum, as shown in drawing 2, Fig. A.



A strip of block-tin, rolled to about No. 30 gauge, and a quarter to five-sixteenths of an inch in width, by one and a half inches in length, trimmed to approximate the festoon of the gum, was placed around the tooth as prepared, drawn close and held in position by the fingers of the left hand. With a pair of flat-nosed pliers the ends of the tin band were grasped in such a manner as to draw it to an accurate fit. The band was then withdrawn, carefully straightened, and the ends cut just outside the marks left by the nose of the pliers. I then cut a strip of gold from the pattern thus made, beveled the ends on opposite sides with a hammer and anvil, bent into the form of a hoop, till the ends overlapped, and soldered with 20k gold.

I thus made a band that *fitted* the tooth *at the neck*—the place where the band ought to fit, and where *wire* patterns without the use of remarkable judgment, cannot succeed in doing it, owing to the fact that the labial aspect of the tooth is usually much

higher than the lingual, and a pattern much too large is the result. Nor do I believe—without seeing—that gentlemen who fit the gold in the mouth, using no pattern, do quite so well, because of the lesser degree of pliability in the gold.

My band was then beveled at the cervical edge and *driven* on—this, sometimes, requires no little force. I next burnished a plate of pure gold over the end and beveled surface of the tooth, inside the band, secured it with wax, removed, invested, soldered and returned to position. The labial side of the band was then trimmed, leaving a cap, such as is shown at Fig. B. A porcelain facing was then ground to fit, backed with thin platinum—the backing being held in place by bending the pins over it,\* waxed in position, and carefully removed for investment and soldering. While waiting for the first investment of my central cap to harden, I prepared the left superior cuspid root by grinding off the frail edges near the gum, and with excavators suitably tempered the enamel was quickly and easily scaled off. A cap made as just described, except the cap was perforated and a pure platinum pin, No, 17, inserted, extending into the root, making the ordinary Richmond crown. My left superior second bicuspid was next in order, and with disks, flexo-files and corundum wheels of various sizes, this was soon reduced to the proper shape for cap-crowning. In all cases using the block-tin patterns.

My patient was then dismissed to await the action of the arsenical application—returning next day with the nerve slightly sensitive, yet sufficiently dulled to sensibility to admit of its extirpation.

I then excised the crown, made a Richmond crown as described, with a pin standing off at a decided angle, as shown in the illustration.

My caps and crowns were all placed in position and a plaster impression taken, from which a plaster-and-marble-dust model

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\* My experience has demonstrated that this is the best way to hold the platinum backing securely in position, and it does *not* cause checking or cracking of the teeth as is sometimes claimed. If the platinum is permitted to *overlap* the ends of the tooth and gold flowed there over the contraction of the gold, on cooling, will surely crack the porcelain and that is about the only way it can be cracked—ordinary care only is necessary in heating and cooling.

was made. Dummys, backed in the usual manner, by burnishing thin platinum over the lingual side, investing, and melting coin scraps over the platinum surfaces, were mounted on the model; the whole *invested* as one piece and the parts united with solder (using care, however, not to unite the right superior cuspid with the lateral incisor adjoining—making two separate pieces of it—the right lateral incisor *swinging* from the central abutment and the right first bicuspid swinging from the cuspid.)

In bicuspid and molar dummys I have occasionally seen cases where ordinary *plate* teeth, or facings *backed* heavily were used, but without protection at the grinding edges. They should never be so constructed. In all cases cusps of gold should be swaged and soldered to the ends. The surface of any tooth, front or back, that comes in contact with its occluding antagonist, should be protected with gold, because the comparative rigidity of a bridge-piece renders the possibility of fracture of the porcelains, in mastication, far greater than it could be in the case of a plate, where the force of the blow is absorbed in soft tissues beneath.

In regard to *repairs* I resort to radical methods; preferring to take a little extra trouble at once and do it well, rather than spread it out over time by trying to “fix it” *in the mouth* and having to repeat the fixing at almost regular intervals. I *take the bridge out*, repair it, and replace it. If it has been properly constructed the necessity for repairs occurs so infrequently that I can well afford to do this even at a sacrifice of some slight remuneration.

I frequently use bands for attachments. I like them better than to sacrifice a comparatively good crown. But I make them sufficiently heavy even at the expense of appearance, and recently I have been giving them additional strength by tapping and setting one or two gold *anchor screws* on the palatal side and, perhaps, one on the disto-labial. Screws in this connection open an interesting field of speculation as to the extent to which their use may be advantageously carried. Space, however, will permit only the mere suggestion of this interesting feature at this time.

There are some operators who buy "Seamless bands" and ready-made cap crowns. I want to enter a protest against the use of such articles. I have infinitely less respect for ready-made bands or gold crowns, however limitless the variety, than I have for ready-made clothes. The fit may seem good to the man whose want of experience leads him to use such things, but it is only a matter of time 'till your bands and crowns "split up the back" and "bag at the knees" in a manner most damaging. A crown that is a shade too large may be "drawn in" until it hugs the root so tight that it is difficult to withdraw it, but that is *not fitting*. It must be so accurately made from an accurate pattern that a burnisher will *stretch it* into the little depressions without kinking, and that cannot be done with a band that was "drawn in."

I know no reason why men practicing *dentistry* should buy such things. The time necessary to construct a gold cap should not exceed thirty minutes, and the average cost of a molar crown with solid gold cusps, "made to order," is about one dollar and sixty cents. If you cannot easily make your gold bands and crowns, you cannot possibly make bought ones fit.

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#### DISCUSSION.

DR. J. E. ROBINSON: After a careful reading of Dr. Mitchell's paper, a copy of which was kindly sent me, I find so few points to attack, that in a general way my "opening discussion" must partake more of the character of an indorsement than of adverse criticism. Still, with the paper before me I am enabled to find a few points that, had I written it, would have been treated a little differently, though, perhaps, not so ably. Although the Doctor further on in his paper admits that crowning teeth and portions of teeth, helps to preserve them for further usefulness and renders what would otherwise be unserviceable, capable of renewing its functions, I must insist that crown-work is in fact tooth-saving and not "second only in importance to tooth-saving." To my mind crown-work, especially cap crowns, when made to take the place of large fillings in molar and bicuspid teeth, where on account of frail walls or inability to obtain

good anchorage is tooth-saving par excellence. If carefully fitted and the shell or band made to extend beyond and well under the margin of the gums, teeth when largely decayed can be so crowned that good service can be had much longer than any filling of whatever material constructed can possibly do. Hence I call this tooth-saving. In regard to using porcelain crowns of the Logan or Bonwill stamp, I, too, am of the opinion that none but the six anterior teeth are so well or nearly saved, as by the shell or cap crown. Even in these teeth much better results are obtained if the tooth is supported by a small band around the neck as well as by the post in the center of the tooth. The band on this class of teeth can be fitted so nicely and trimmed so closely that when finished it will have the appearance of cervical filling and be no more conspicuous.

I have never crowned a bicuspid or seen one done by other operators that I did not think would have been better with the addition of a band. The different methods of setting crowns are in the main orthodox, and I will take none of your time in what must be a repetition of manipulation.

The beveling of the tooth where the nerve can be saved by so doing is good practice, as we are enabled to do away with a portion of the gold face which is more or less unsightly, and supply its place with porcelain which, when carefully selected, can be made to harmonize with the surroundings.

On bridges all facings should be protected, and that can be accomplished without bringing the gold into prominence by a slight bevel at the cutting edge. Removable bridges are to me an abomination, so I will pass that portion of the paper with no further comment.

As a rule 'tis better to remove a bridge when a tooth or facing becomes broken before attempting to repair it, but often we are compelled to try to replace a facing with the bridge in place. I have here a few instruments suggested by myself and made by Dr. J. F. Stephan that have been of great help in such cases. You will see that by their aid after you have fitted the facings and drilled holes for the pins, that they can be made quite secure, in fact quite as secure as if riveted, which is the result prac-

tically attained. Perhaps it would be superfluous for me to add that whenever possible all bands should project to some extent over the cutting edge of the tooth to prevent pushing up through force of mastication. With these few remarks I leave the paper to be discussed in its other and perhaps more important parts to those who follow me.

DR. J. F. DOUGHERTY agreed with Dr. Mitchell in his methods of crown and bridge-work, but did not approve of bands generally in bridge-work.

DR. G. MITCHELL does not use bands back of the anterior teeth, but thinks they will not creep up under the gum and cause irritation if they are properly fitted to the crown of the tooth.

DR. G. H. WILSON said if a shoulder be ground into the lingual surface of a cuspid and the band fitted approximately, with the aid of the cement, it would not be so liable to displacement.

DR. J. R. OWENS thought that crown and bridge-work was being overdone. Of nine cases in ten where it is used it should not be. To band two teeth to replace one was not wise as it was only a matter of time until the banded teeth would be destroyed by decay under the bands. Gold crowns are excellent substitutes where the natural crown is gone, but to place them on teeth that could be filled, in his judgment was bad practice.

DR. J. H. WIBLE thought gold crowns preferable to fillings where it was necessary to largely restore the crown.

DR. DOUDS asked Dr. Mitchell how he removed a bridge when repairs were necessary.

DR. MITCHELL said if it was a band to be removed he generally used a bayonet forcep, placing one of the beaks on the edge of the tooth, the other under the further edge of the band and by gently bringing the forcep together the attachment was broken. In case of a gold cap he takes an engine bur, No. 00, and cuts a slit in the cap, folds back the corners and it is easily displaced. To reunite, bend back the corners, lay a small piece of platinum on the under side and flow solder into the space made by the bur. In case there was a post in the root he cuts

off the post and removes from root by drilling around it with a suitable bur.

DR. J. R. BELL had seen enough bridge-work to convince him that it was the most dangerous work that could be placed in the oral cavity. It not only causes local trouble but often systemic. Some of the frequent results were abscess, neuralgia, etc.

DR. W. H. FOWLER said he had returned to the old-fashioned method of clasping. Wide clasps and rubber vulcanized in the tooth to rest against ridge and a small portion of palatine side of gums.

DR. L. L. BARBER thought if properly used bridge-work was a good thing, but the operator must use much judgment as to the advisability of a bridge and also in its construction. Much of the faulty work comes through lack of judgment on the part of the operator.

DR. H. E. DUNN said his experience with clasp plates had been a sorry one. There must be more or less movement of the plate and that only aggravated the irritation. If confined to small pieces he thought the bridge-work in suitable cases was better than filling. A nicely adapted band well burnished to the tooth will approximate a good gold filling.

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### Nerve-Stretching in Inveterate Trigeminal Neuralgia.

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Dr. James Stewart (*Montreal Medical Journal*) says: Nerve-stretching gives either complete or great relief in the majority of cases. Relief is not permanent in more than 5 per cent. of cases. If the pain should return the operation should be repeated, even several times, before resorting to a neurectomy, or ligature of the common carotic. If the pain is not strictly and always limited to one branch of the nerve, several branches should be stretched. As relief does not always immediately follow the stretching a second operation should not be undertaken until some time has elapsed.

## THE WORLD'S CONGRESS AUXILIARY OF THE WORLD'S COLUMBIAN EXPOSITION.

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### Department of Medicine—General Division of Dental and Oral Surgery.

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#### PRELIMINARY ADDRESS OF THE COMMITTEE ON A DENTAL CONGRESS.

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It is the aim of the World's Columbian Exposition to bring together the evidences of material progress and achievement of the civilization of the world, and so arrange them that every department of human endeavor may be studied and examined through all its various grades of development.

It is also their desire to represent the intellectual and scientific development and achievement of the entire civilized world by a series of great congresses to be held during the progress of the Exposition.

In pursuance of this object the World's Congress Auxiliary was organized by the World's Columbian Exposition, and it has received the recognition and support of the government of the United States.

It is the plan of the World's Congress Auxiliary to bring into communication, through these congresses, the best thinkers and workers in every department of knowledge, including religion, science, philosophy, literature, art, agriculture, trade and labor, etc., and by the presentation and interchange of ideas, methods, theories and practical experiences to promote the advancement of all that is noblest and best of our present civilization.

Committees have therefore been appointed to organize a series of congresses, representing nearly every field of thought, and of speculative and practical endeavor.

In the field of professional achievement, medicine and surgery in their various special applications, will form a very large and interesting feature of the work of the World's Congress Auxiliary.

Dentistry is an important department of medical science and an outgrowth of our modern civilization. Its present perfection is in considerable degree due to the thought and labor of American minds.

The history of modern dentistry is covered by a period of less than two generations, and yet it has advanced from the rude operations practiced by the blacksmiths and barbers, to one of the most scientific and exact of the specialties of the healing art.

Scientific dentistry had its birth in the United States of America. This country has the proud distinction of having organized the first school for the teaching of dental science, and the establishment of the first periodical journal devoted to the interests of dentistry, while very many of the most useful appliances and scientific methods have originated on this side of the Atlantic.

It is therefore eminently fitting that dentistry be represented at the World's Columbian Exposition by a display of the progress which has been made in the development of its materials, instruments, appliances, processes and methods of a practical nature, and in scientific research, literature and professional education.

With this end in view the dentists of the United States took steps in August, 1890, to organize such a World's Congress, by the appointment of a General Executive Committee, to whom the whole matter of organizing and conducting the congress was referred.

The work, therefore, of the Committee on Dental Congresses appointed by the World's Congress Auxiliary will be chiefly in co-operation with that General Executive Committee, in publishing to the world from time to time the progress of the work of organization, in promoting the interests of the congress in every way within their power, and keeping it in harmony with the general plans of the World's Congress Auxiliary.

Every effort will be made to secure the best talent in the presentation of scientific subjects and in practical demonstrations.

The World's Columbian Exposition, through its directory, will provide ample accommodations for all the various World's

Congresses to be held in Chicago in 1893. The Memorial Art Palace, now in process of erection upon the shore of Lake Michigan, and located near the center of the city, will be devoted to this purpose. This building will contain two large audience rooms, with a seating capacity of about three thousand each, which will be used for the general congresses of the various departments, besides numerous smaller rooms, suitable for the chapters and sections of the congresses, thus affording for the Dental Congress ample accommodations for clinical demonstrations of a suitable nature.

During the sessions of the Dental Congress several popular evening meetings will be held to which the general public will be invited. At these meetings, which are intended to be educational, illustrated lectures will be delivered by some of the most eminent men of the profession upon topics which are deemed to be of vital importance to the public. These meetings will be especially under the control and management of the World's Congress Auxiliary. When the suggestions of the Advisory Councillors of the Dental Congress shall have been received as to the most interesting and vital questions to be presented, a programme will be arranged for publication.

A cordial invitation is extended to the dentists of the world to take part in the scientific work of the Congress by the presentation of papers and discussions, or demonstrations of new or improved methods and appliances.

America, and Chicago in particular, will have a hearty welcome for all who may come.

An earnest effort was made to bring the meeting of this Congress in close connection with others of the Department of Medicine, but that effort having proved unavailing, arrangements have been effected under which the meeting of the dental profession will be held on, or near, August 17th, and is expected to continue during the week or ten days following. Definite dates and details will be given in the programme.

Communications in reference to the special work of the Congress should be addressed to Dr. A. O. Hunt, Secretary World's Columbian Dental Congress, Iowa City, Iowa, U. S. A.

Communications in reference to the general work of the World's Congress Auxiliary and suggestions from the Advisory Councillors may be addressed to the Chairman of the Committee.

DR. JOHN S. MARSHALL, *Chairman*,  
No. 34 Washington Street, Chicago.

DR. A. W. HARLAN, *Vice-Chairman*.

|                    |                          |
|--------------------|--------------------------|
| DR. G. V. BLACK,   | DR. GEORGE H. CUSHING,   |
| DR. N. NELSON,     | DR. A. W. FREEMAN,       |
| DR. C. N. JOHNSON, | DR. E. S. TALBOT,        |
| DR. A. E. BALDWIN, | DR. GEORGE A. CHRISTMAN, |

Committee of the World's Congress Auxiliary on a Dental Congress.

THE WOMAN'S COMMITTEE OF THE WORLD'S CONGRESS AUXILIARY ON A DENTAL CONGRESS.

DR. HATTIE E. LAWRENCE, *Chairman*.  
DR. MARIE T. BACON, *Vice Chairman*.

Dr. Emma Beanham, Dr. Louise Peterson, Dr. Rebecca McIntosh.  
WORLD'S CONGRESS HEADQUARTERS, CHICAGO, JUNE, 1892.

PARTIAL LIST OF THE

ADVISORY COUNCIL OF THE WORLD'S CONGRESS AUXILIARY ON A DENTAL CONGRESS.

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| Dr. F. Busch, Berlin, Germany.         | Dr. C. C. Knowles, San Francisco, Cal. |
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| Dr. E. Magitot, Paris France.          | Dr. G. V. Black, Jacksonville, Ill.    |
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| Dr. W. H. Coffin, London, England.     | Dr. W. W. Allport, Chicago, Ill.       |
| Dr. W. Geo. Beers, Montreal, Canada.   | Dr. W. W. Walker, New York City.       |
| Dr. H. C. Edwards, Madrid, Spain.      | Dr. L. D. Carpenter, Atlanta, Ga.      |
| Dr. E. Lecaudy, Paris, France.         | Dr. J. Y. Crawford, Nashville, Tenn.   |
| Dr. —Plattschick, Pavia, Italy.        | Dr. W. J. Barton, Paris, Texas.        |
| Dr. Jos. Arkovv, Buda Pesth, Hungary.  | Dr. J. Taft, Cincinnati, O.            |
| Dr. C. Redard, Geneva, Switzerland.    | Dr. C. S. Stockton, Newark, N. J.      |
| Dr. J. G. Van Marter, Rome, Italy.     | Dr. L. D. Shepard, Boston, Mass.       |
| Dr. W. H. Morgan, Nashville, Tenn.     | Dr. H. J. McKellops, St. Louis, Mo.    |
| Dr. W. H. Dwinelle, New York City.     | Dr. A. O. Hunt, Iowa City, Iowa.       |
| Dr. R. B. Winder, Baltimore, Md.       | Dr. H. B. Noble, Washington, D. C.     |
| Dr. Elisha G. Tucker, Boston, Mass.    | Dr. Geo. W. McElhanev, Columbus, Ga.   |
| Dr. W. W. H. Thackston, Farmville, Pa. | Dr. J. C. Storey, Dallas, Texas.       |
| Dr. J. B. Rich, Washington, D. C.      | Dr. M. W. Foster, Baltimore, Md.       |
| Dr. J. D. White, Philadelphia, Pa.     | Dr. A. W. Harlan, Chicago, Ill.        |
| Dr. W. H. Eames, St. Louis, Mo.        | Dr. J. S. Marshall, Chicago, Ill.      |

PARTIAL LIST OF THE WOMAN'S ADVISORY COUNCIL ON A DENTAL CONGRESS.

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| Dr. Lucy Hobbs Taylor, Lawrence, Kan.   | Dr. Henriette Tiburtius-Hirschfeld, Berlin, Germany. |
| Dr. Olga Neymann, New York City.        | Dr. Helene Wogl v Swiderska, St. Petersburg, Russia. |
| Dr. Jessie Ritchie, Des Moines, Iowa.   | Dr. Bella Meller, Vienna, Austria.                   |
| Dr. Annie D. Romborgen, Phila. Pa.      | Dr. Helene Freudenheim, Königsberg, Germany.         |
| Dr. Jennie Hilton, Fort Atkinson, Wis.  | Dr. Marie M. Schneeyans, Eberfeld, Germany.          |
| Dr. Clara W. McNaughton, Wash., D. C.   | Dr. Emma Lacy, London, England.                      |
| Dr. Kate C. Moody, Mendota, Ill.        | Dr. Clotilde Lenta, Rome, Italy.                     |
| Dr. Martha J. Robinson, Cleveland, O.   |  |
| Dr. Annie F. Reynolds, Boston, Mass.    |  |
| Dr. Mary T. Benfield, Honolulu, Hawaii. |  |
| Dr. Mary Holst, Aarhus, Denmark.        |  |

## PROCEEDINGS.

### Missouri State Dental Association.

The twenty-seventh annual meeting of the Missouri State Dental Association was held at Clinton, Mo., July 5th to 8th inclusive. There were twenty-six new members admitted and eleven papers read. The following is the completed list of officers and committees elected for the ensuing year:

President, Dr. J. D. Patterson, Kansas City; First Vice-President, Dr. W. E. Tucker, Springfield; Second Vice-President, Dr. De Coursey Lindsley, St. Louis; Corresponding Secretary, Dr. Wm. Conrad, St. Louis; Recording Secretary, Dr. H. A. Rubey, Clinton; Treasurer, Dr. Jas. A. Price, Weston.

Executive Committee—Dr. C. B. Hewitt, Kansas City; Dr. A. J. McDonald, Kansas City; Dr. J. E. Crozier, Lees Summit.

Board of Censors—Dr. E. E. Shattuck, Kansas City; Dr. H. A. Cress, Warrensburg; Dr. E. B. Crane, California.

Committee on Ethics—Dr. Frank Slater, Rich Hill; Dr. J. B. Newby, St. Louis; Dr. C. L. Hungerford, Kansas City.

Law—Dr. Jas. A. Price, Weston.

Committee on Publication—Dr. J. E. Crozier, Lees Summit; Dr. T. J. Frey, Moberly; Dr. C. L. Hickman, St. Louis.

Committee on New Appliances—Dr. C. L. Hungerford, Kansas City.

Supervisor of Clinics—Dr. C. H. Darby, St. Joe,

The next meeting of the association will be held at Excelsior Springs, Mo., on the first Tuesday after July 4th, 1893.

WILLIAM CONRAD, Cor. Sec'y.

ST. LOUIS, MO.

## West Virginia State Dental Society.

The first annual meeting of this society will be held at Wheeling, Wednesday, October 5. Members of the profession are cordially invited to be present.

H. H. HARRISON, President, Wheeling, W. Va.

GEO. I. KEENER, Secretary, Morgantown, W. Va.

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### Report on Necrology.

The following testimonials and resolutions were presented, read and adopted at the recent meeting of the American Dental Association:

IN MEMORIAM—DR. JOHN ALLEN.

In the dispensation of an all-wise and over-ruling Providence Dr. John Allen, of New York, on the 8th day of March, 1892, at the age of eighty-two, passed from this to a higher and better life; having attained a fullness and ripeness of age beyond that of the common lot of men.

Dr. Allen stood as a representative man in the profession of his choice.

In the line to which he gave special attention he was the chief, and was so recognized not only in this, but in the countries of the world wherever prosthetic dentistry is known and practiced. He, it was, who brought to its present high state of perfection that variety of substitutes known as continuous gum dentures.

Though his chief attention and labor were devoted to this special work he was interested and took part in the various lines of thought and effort that were employed for the development, growth and establishment of dental science and art. He was ever ready to defend, and sought to elevate the profession to a higher plane of usefulness.

Dr. Allen was one of the organizers of the Ohio College of Dental Surgery, a professor and an efficient teacher in that institution.

In the subject of dental education he always manifested a warm interest. A writer of more than ordinary ability he has added many valuable contributions to the literature of the profession.

He was an active member of this association from almost the time of its organization and did much to promote its welfare. He was also a member of, and an active worker in, a number of other dental societies.

Dr. Allen was a man of purest character and highest integrity; one not only respected but loved by all who knew him; in manner most affable; in bearing dignified; in spirit gentle and sympathetic.

The loss of such a one is always an occasion of sadness and sorrow, but we have the consolation of the knowledge that his career was rounded, full and complete, and his death closed a life filled with good works for his fellowmen.

In view of the above,

*Resolved*, That we will ever cherish the memory of our departed brother and seek to establish and perpetuate the high principles that were so fully illustrated in his noble life.

*Resolved*, That the traits so pre-eminently characterizing the life of him we now commemorate are worthy, not only of our high regard, but most earnest emulation.

*Resolved*, That this testimonial be placed on a memorial page of the transactions of this body and a copy, properly engrossed, be sent to the family of the deceased; also that a copy be sent to the dental journals of this and other countries for publication.

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IN MEMORY OF C. A. KINGSBURY, M.D., D.D.S.

Within the last year Dr. Chas. A. Kingsbury was called from this to a higher life, in the seventy-second year of his age.

Dr. Kingsbury many years ago became identified with this association and retained his membership to the time of his death, and though he was not always present at its meetings, so highly was he esteemed by the membership of the body that it was a pleasure to all to have his name upon the roll of members.

Dr. Kingsbury entered the practice of the profession in 1839, in Philadelphia, and continued actively engaged in its pursuit during his life. He studied dentistry in Trenton, N. J. He was intimately acquainted with the leading men of the profession almost the whole of his professional career, and imbibed, in a large measure, the interest and enthusiasm of those men for dental science and art; indeed, that association, in a degree, shaped his professional life. He was familiar with all things that entered into the development and progress of dentistry for about fifty years. He was a man of liberal learning and broad culture; one whose sociability was a predominant characteristic. In his early life he was a teacher, and after many years practice of his profession he was for a time a successful teacher in one of the dental colleges in the city of his home. He was highly esteemed by all who knew him; he was a man of sterling characteristics, genial, kind and sympathetic in his association with his fellows. In his death, not only this association, but the entire profession loses another of the pioneers who was ever devoted to its interests, ever contributing of his resources to its up-building.

*Resolved*, That we will ever cherish the memory of our departed brother as one whom we delight to honor, and to emulate in his leading characteristics.

*Resolved*, That this statement and resolution be placed upon the memorial page of the proceedings of this body. That a copy, in proper form, be transmitted by the secretary to the family of the deceased, and that it be sent to the journals for publication.

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### Practical Use of Bacteria.

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It is reported that a few weeks ago a plague of mice threatened to destroy the whole harvest of Thessaly, in Greece. The Greek Government asked Professor Löffler, of Greiswald, to assist it, which he effectually did by inoculating some of the mice and turning them loose, thus causing a fatal epidemic among them.

# EDITORIAL.

## Educational.

In various ways is progress shown in our educational efforts. Teaching faculties are everywhere seeking and devising better methods in their work. New branches are being made tributary to our educational scheme. It is now recognized more fully, perhaps, than ever before that culture and education, both general and special, increase power, ability and influence.

The products of invention and genius are now made the property of not only the practitioner but of the student as well. The students in some dental colleges, at least, early begin a training in certain directions that practitioners have found of great value. Of these, mention may be made of students' dental societies. These have been organized in a number of colleges, and with most marked benefit to those engaging in them. Not only do they serve in fixing in the minds of the students the various subjects to which their attention is called in their regular course, but it is a training in the way of writing, speaking, and conducting association work, that not only now, but in the future will be of immense benefit. It is true that up to within a comparatively short time a very small per cent. of those who became members of dental societies took any active part in the work. Student training and association work will change this condition of things for the future; the men who are now entering our profession will in the near future make a marked change in this respect. They will be able to take their part in the conduct of such work, and, indeed, in all that pertains to it, such as writing, speaking and demonstration; and so, we should say to students everywhere, engage in this kind of work, organize your societies in every college. It may be best sometimes for all to join in one effort, in other cases it may be better to form two or three societies, corresponding to the different classes, viz.: freshman, junior and senior. This, however, should be decided by those of each particular institution. Our advice is, therefore to the boys, organize your societies early in your college work, and continue throughout the entire course.

## The World's Columbian Exposition.

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But a few weeks now remain before the time of the dedication of the Exposition buildings, in October, yet the construction of the buildings is progressing so rapidly that we are encouraged to think all will be completed in time for that grand occasion. Invitations have been sent to many distinguished persons to attend these ceremonies; the invitation conveyed to the President of the United States has been accepted, and it is probable that every member of the President's Cabinet, and nearly every Senator, Congressman and Governor will be present. The music on that occasion will be specially grand. Sousa's Chicago Band will be a prominent participant; it is his intention to draw liberally on the best musical talent in this country and abroad in order that this new band may eclipse every other on this side of the Atlantic.

Antiquarians who expect to visit the World's Fair will have a treat in store for them; every department, almost, of the great Exposition will have its relics on view; those of Columbus alone will be very numerous; they will be brought from Spain, Italy, Rome, the West Indies, and other widely separated parts of the earth.

One of the best contributions from the States will be shown by Pennsylvania, the collection being furnished largely from Philadelphia under the auspices of a committee of its city council. Among the objects in this collection are the following: The chair occupied by Thomas Jefferson, when writing the Declaration of Independence; the table on which it was signed; the silver inkstand used on that occasion; Thomas Jefferson's sword; chair of memorial woods, including parts of Columbus' house in Spain; bell rung at Valley Forge when Washington occupied that place with his army; sofa belonging to George Washington; bench made from pew in old Christ Church occupied by Washington and Lafayette; punch bowl used by Washington and other revolutionary officers; first lightning rod invented by Ben. Franklin; electrical machine invented by Franklin; fans used by Franklin at the court of France when he was minister

there ; clocks of Benj. Franklin, William Penn and Oliver Cromwell, running and keeping good time ; Thomas Jefferson's thermometer ; Pocahontas' necklace ; surveying instrument used by William Penn in laying out the city of Philadelphia ; the famous Liberty Bell, etc., etc.

In the Government building will be exhibited the original standard surveyor's chain, authorized by act of Congress, May 18, 1797, for executing surveys of Government lands. The chain was made by Benj. Rittenhouse, of Philadelphia, in 1797, and is still in the same hard wood box in which it was sent out by the manufacturer.

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### The Pan-American Medical Congress.

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CINCINNATI, O., SEPT. 2, 1892.

In accordance with the wishes of the Committee on Permanent Organization Drs. I. N. Love, A. B. Richardson, L. S. McMurtry, R. B. Hall, T. V. Fitzpatrick and Chas. A. L. Reed met in Cincinnati, O., and signed the legal form of application for the Articles of Incorporation of the Pan-American Medical Congress, which articles of incorporation were duly issued by the Secretary of the State of Ohio under date of March 15th, A. D. 1892.

There are twenty-one sections in the congress, each devoted to some specialty in medicine. Number 19 is that of Oral and Dental Surgery, with Drs. M. H. Fletcher, of Cincinnati, as Chairman, and John S. Marshall, of Chicago, as Secretary.

The honorary chairmen of this section are :

DR. J. TAFT, Cincinnati,  
DR. H. J. McKELLOPS, St. Louis,  
DR. R. R. ANDREWS, Boston,  
DR. WM. CARR, New York,  
DR. E. A. BALDWIN, Chicago,  
DR. B. H. CATCHING, Atlanta,  
DR. FRANCIS PEABODY, Louisville,  
DR. J. H. HATCH, San Francisco,

DR. LOUIS JACK, Philadelphia,  
DR. A. O. HUNT, Iowa City,  
DR. S. B. BROWN, Ft. Wayne,  
DR. GEO. J. FREDERICHs, New Orleans,  
DR. J. C. STOREY, Dallas,  
DR. J. B. WILLMOT, Toronto, Canada,  
DR. GEO. BEERS, Montreal.

"The members of the Congress shall consist of such members of the medical profession of the western hemisphere, including the West Indies and Hawaii, as shall comply with the special regulations regarding registration, or who shall render service to the Congress in the capacity of foreign officers."

The first P. A. M. C. shall be held in the city of Washington, D. C., Sept. 5, 6, 7, 8, A. D., 1893.

The words "Medical Profession" in the "General Regulation" are intended to include the dental profession on the same ground that they are entitled to membership in the American Medical Association, viz.: That one holding the title of D.D.S., without the M.D., is eligible to membership, consequently it is expected that the section of Oral and Dental Surgery will form one of the most interesting sections of the Congress.

M. H. F.

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### Biographical.

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Died—Dr. Daniel W. Roudebush, at his home in Covington, Ky., after an illness of six months, August 26th, 1892.

He was born August 6th, 1821, at Goshen, Clermont Co., Ohio. He secured an education chiefly by his own effort, working during the summer and attending school during the winter. He read medicine in the office of his cousin Dr. Isaac Thecker in his native town. He afterwards studied and took up dentistry for his life work. Preparatory to this he was a pupil under the late Dr. John Allen, and also the late Dr. D. B. Wheeler, both of Cincinnati. He attended lectures at the Ohio College of Dental Surgery in 1855. In that year he opened an office in Covington where he was in active practice for thirty-seven years,

except for a brief period during which he was associated professionally with Dr. J. Taft, in Cincinnati.

He was married in October, 1845, to Mrs. Nancy A. Flanders, who with one son, Dr. C. M. Roudebush, and two daughters, Mrs. C. E. Wasson and Mrs. Geo. O. Shivers, survive him.

Dr. Roudebush was passionately devoted to his profession and followed it with a most persevering industry, and to this, undoubtedly, was due, in a great degree, the failure of his health.

He was interested in whatever promoted his profession. He was quite a favorite with all who knew him, and only those could appreciate his real character.

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### Resuscitation after Drowning.

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At a meeting of the French Academy of Medicine, Laborde (*Munchener Med. Wochensch.*, 1892, No. 28, p. 501) reported the resuscitation from drowning of two cases by separating the jaws and alternately strongly drawing the tongue forward and pushing it backward. The strong traction on the root of the tongue exerts a reflex influence upon the respiratory apparatus, and may be made to conform to the respiratory rhythm.—*Med. News.*

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### Tooth Culture.

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In a capital address on "Tooth Culture," delivered at the annual meeting of the Eastern Counties Branch of the British Dental Association, printed in the current number of the *Lancet*, Sir James Crichton-Browne referred to a change which has taken place in bread, as one of the causes of the increase of dental caries. So far as our own country is concerned, this is essentially an age of white bread and fine flour, and it is an age therefore in which we are no longer partaking, to anything like the same amount that our ancestors did, of the bran or husky parts of wheat, and so are deprived to a large degree of a chemical element which they contain—namely, fluorine. The late Dr. George Wilson showed that fluorine is more widely dis-

tributed in nature than was before his time supposed ; but still, as he pointed out, it is but sparingly present where it does occur, and the only channels by which it can apparently find its way into the animal economy are through the siliceous stems of grasses and the outer husks of grain, in which it exists in comparative abundance. Analysis has proved that the enamel of the teeth contains more fluorine, in the form of fluoride of calcium, than any other part of the body, and fluorine might, indeed, be regarded as the characteristic chemical constituent of this structure, the hardest of all animal tissue, and containing 95.5 per cent. of salts, against 72 per cent. in the dentine. As this is so, it is clear that a supply of fluorine, while the development of the teeth is proceeding, is essential to the proper formation of the enamel, and that any deficiency in this respect must result in thin and inferior enamel. Sir James Crichton-Browne thinks it well worthy of consideration whether the reintroduction into our diet of a supply of fluorine in some suitable natural form—and what form, he asks, can be more suitable than that in which it exists in the pellicles of our grain stuffs?—might not do something to fortify the teeth of the next generation.

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### **The World's Columbian Dental Congress.**

The General Executive Committee of the World's Dental Congress met at Lookout Mountain, Tenn., Monday, July 25th. All except three members present. The committee was busily engaged for about two days arranging matters for the great congress. Some additional committees were appointed. An important part of the work accomplished here was specifying the duties of the various committees, so that each may understand clearly the work it has before it. A large number of persons was appointed, not only to the new committees but upon committees that had already been appointed. It is evident that if the work in any particular fails it will not be for want of a goodly number of persons on each committee.

The Finance Committee, one of the most important of the whole list of committees, had not found its way for work open and clear till this meeting; its chairman and the other members

of its committee have now taken up the work in earnest. To carry the work of the congress in all its details and to keep it fully abreast with the other departments of the great Exposition will require a large amount of money, probably from fifty to seventy-five thousand dollars, and in order that there may be no lack in this respect we suggest that the members of the profession to whom the Finance Committee may apply respond liberally and promptly; no one should hesitate for a moment to make a liberal contribution. This will be the grandest event for dentistry the world has ever seen, one in the results of which every dentist will be personally interested, and in a variety of ways it will add honor, dignity and importance to the profession if it is properly carried through. No work done by the committee on the occasion of its recent meeting was of more importance, perhaps, than the consideration of the finance question.

A great deal of other work was done by the committee, and the utmost harmony and warm interest, even to enthusiasm, seemed to pervade the mind of every member of the committee.

A circular of information will very soon be issued by the Editorial Committee which will indicate the present status of the enterprise.

The next meeting of the Executive Committee will be held in Cincinnati on Monday, October 24th, when it is to be hoped that every member of the committee will be present.

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### Death of the Inventor of the Hypodermic Syringe.

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The ordinary hypodermic syringe is known in France as the "*Seringe de Pravaz*," the instrument having been invented by Dr. Pravaz, of Lyons. The death of this gentleman is announced in this week's journals. He was the director of an orthopedic establishment in the silk capital, and was well known as a *medecin orthopediste*.

# THE DENTAL REGISTER.

VOL. XLVI.]

OCTOBER, 1892.

[No. 10.

## PROCEEDINGS.

### The Southern Dental Association, 1892.

REPORTED FOR THE DENTAL REGISTER BY MRS. J. M. WALKER.

The Southern Dental Association convened in twenty-third annual session July 26, 1892, at Lookout Mountain, Tenn.

The President, Dr. Gordon White in the chair. The meeting was opened by prayer by Dr. J. Taft, of Cincinnati, Ohio.

Dr. J. Y. Crawford then, on behalf "of a few friends" presented the president with an elegant silver-mounted gavel, suitably inscribed, and held in a rich, crimson, satin-lined, plush case. The gavel, Dr. Crawford said, was made from the wood of an historic tree, grown on an historic spot, and was placed in the hands of a man of exalted character, by whom he hoped it would be cherished as a slight memento of professional and social regard.

An eloquent and witty address of welcome on the part of the Mayor, the Chamber of Commerce and the citizens of Chattanooga by Mr. H. F. Olmstead, was followed by Dr. D. R. Stubblefield, of Nashville, Tenn., who welcomed the Southern Dental Association in behalf of the State Society of Tennessee.

Dr. Geo. J. Friedrichs, of New Orleans, responded on behalf of the association.

Dr. Gordon White, the president of the association, next read his annual address, as follows:

*Gentlemen of the Southern Dental Association:*

I purpose to bring before you at this meeting several subjects of interest to our profession. The one I deem of greatest importance has been talked of, in an undertone, by many of us

for a long time. We should have no secrets in our professional family—the subject is professional dignity, or rather lack of professional dignity, for the subject is too broad for me to touch on any but abuses known to all.

“Every profession has its scum,” says a noted Frenchman. Alas, that those whom in the South we term good men should place themselves on a level with that scum by their methods of advertising. True, it is often only a newspaper interview that catches the eye as we glance through the paper, but it is an advertisement none the less. In the secular press of one section we find a column given the dentist who has performed, what he considers, a very remarkable operation; in that of another section a column and a half is required to properly describe the beauty and perfection of a certain piece of extensive crown and bridgework; while in still another we read not only of the wonderful inventions of our brother but also of the architecture and furnishings of his office. In one locality we find a college graduate asserting his skill in every known branch of the profession, and guaranteeing his work; in another, the familiar poem “Mary had a Little Lamb,” adapted to the requirements of a dental advertisement. Such advertisements are usually accompanied by broad headlines, and not infrequently by a picture of the remarkable individual.

Gentlemen, need I tell you that members of our association engage in this reprehensible practice? Is it professional? Is it dignified? Does the profession approve it? Does it win public respect? A prominent man who for twenty years has advertised, said to me, in a recent conversation, that he did not remember a single desirable patient who came to him through his advertisements.

Why is it that we are so frequently confronted by such advertisements? Are not the schools primarily responsible for this? One reputable (?) college advertises in the newspapers and holds out as an inducement to the uninformed would-be student the fact that the dental graduate is now recognized by the medical profession as occupying the same level as the medical graduate, and further, that their graduates at once step into a

lucrative practice, making in ready money so many dollars a day. Another advertises for infirmity patients and holds not even church pews too sacred for the desecration of its hand-bills. Do such advertisements on the part of the schools give the students a correct idea of the dignity of our profession?

The student while at college should live in an atmosphere of ethics. Does he? It is generally understood that there is one lecture on ethics, delivered usually by the dean at the close of the term, but perhaps not more than one-half of the students hear it.

A worthy professor calls attention to the fact that a student, as a mirror, reflects the idiosyncrasies of his preceptor. What shall we say when a graduate from a college, presumably reputable, with a certificate of the State Examining Board, locates in a town or city and at once calls attention through the medium of flaming hand bills to his "New Dental Parlors and extraordinarily low fees?" Does he not as a mirror reflect the college from which he comes? Are we not agreed that by both precept and example the colleges should sustain and increase our dignity? Are such practices (of both dentists and schools) consistent with our code of ethics? If they are, should not the code be revised? If they are not, should we not feel it our duty to report such violations? Hitherto we have been too timid to report. It is not a personal matter, gentlemen, but we owe it to our profession to aid in every way possible in the suppression of that which will drag us into the mire. The highest court of England, quite recently, held that a man who joins an honorable and registered society must strictly observe the rules of that society under penalty of forfeiture of his membership, and sustained the action of the General Council of Medical Education and Registration in removing the name of a prominent dentist from their membership because of his having advertised his business contrary to the rules of that body. The decisions of that court are a precedent for the courts of other countries. Is not the action of that council a worthy precedent for our association?

Should not the undignified practice of many reputable men of placing on their envelopes their business cards be condemned? Do they not labor under the mistaken idea that it advertises

them or their business? We are professional men, not tradesmen; furthermore, I find upon investigation that in the rarest instance does a letter pass through more than four or five hands in reaching its destination and only when it fails to reach its destination is the business card referred to by the busy postman. To be sure there is nothing wrong or unprofessional in having our name and address on our envelope for the safe return of our mail, but is it not shocking to receive a letter from one of our professional brothers, the envelope of which is adorned with a cut of his wonderful inventions? Strange as it may seem, I have received such from members of this association. In a few instances I have received them with a cut of the writer on both letter and envelope, but they, I believe, were not from any of our members.

To my mind the propriety of having price-lists is questionable. There is certainly no reason why a patient may not know the cost of each operation, but the list, varying as it does from \$5 to \$50, practically amounts to no list. To be sure we have our rates, but you each know that in like operations the fees are rarely the same. It seems to me that it would be difficult to explain the difference satisfactorily to the patient. After all, is the list necessary? We are not in the mercantile business and do not need the advertisement. Do not our patients place themselves in our hands because they have confidence in our integrity and skill? During a practice of thirteen years I have only once been asked for a list, and during my investigation extending through a number of years I remember only one man who claimed to adhere to his list. He very frankly said that he did. If we have a list should we not adhere to it? If we do not, are we not practicing fraud and deception? Does it not look unprofessional? The "Cheap John" displays his list on his sign, the dentist of the "upper ten" on his appointment card. Is there any difference save in the fees?

In most, if not all, of our States laws have been enacted restricting in some particulars the practice of dentistry, and Boards of Dental Examiners have been appointed. These laws were enacted for what was conceived to be the protection of the pub-

lic and our profession as well. They may not, and do not, fully accomplish the desired result, but they are a step towards a higher standard of requirements for the dentist, and the boards in enforcing them should have the moral support of all dentists. The boards need the support, for, while it is almost beyond belief that any one would oppose that which even tends toward our elevation, the Board of Tennessee has met with opposition.

Our fathers in 1869 organized our association for advancement in the science and dignity of our profession. Then the spirit of professional interest was stronger than the animal of self interest, and those loyal, high-minded men did not even dream that one of our memberships would ever be so debased as to be valued for personal aggrandizement. It has been said that the professions are made strong by what they include rather than what they exclude. Let us then include so much love for our grand profession, such high, pure aims in its practice, so much enthusiasm for its advancement, that there will be no room for any unprofessional act or thought. Let us work to an ideal, and let that ideal be as high as finite conception can reach.

Much has already been said in regard to a home for the Southern Dental Association and a permanent committee on a "Dental Chautauqua" has been appointed. The idea, as I understand it, is to erect at some desirable summer resort a building in every way adapted to the needs of the association, and where year after year the meetings may be held. There is much that is desirable in this plan, but is it practicable? It means the outlay of a large sum of money without any return, a dead weight for the association to carry. Furthermore, men will not go to the same place year after year.

If the association will have a home, let it, by all means, be located in some central city and so constructed that a part can be rented, yielding sufficient revenue to pay all expenses. So located "The Home" will be an object of interest to all dentists passing through that city. Besides, there will always be a number of resident dentists to keep up the interest.

My preference is not a Southern but a National Home, and, as has been suggested, a national museum, located in Washington or some central city, where from all parts of the country we can send our treasures. Why not unite with the other societies and build a home that will be a credit to our profession and establish a museum that will fittingly preserve our history for this and future ages—in other words, a monument to the dental profession of America.

In 1890, at our meeting of the association in Atlanta, it was suggested that we be represented at the World's Fair in 1893. The American Association took up the suggestion and a committee of fifteen has been appointed by the two societies, which committee will meet during the present session. The work of organization is far advanced and the World's Columbian Dental Congress will be held August 17 to 27, 1893, in Chicago, Ill. Let us not forget that it was our suggestion and that as such it behooves us to give the committee all the support they expect from us. Certainly they have a right to expect our presence, and so far as possible we should attend this congress.

At our last meeting there was a resolution to the effect that the constitution be so changed as to provide for the election of officers at a much earlier hour, so that the newly-elected president might have the opportunity to make his appointments. This idea is excellent, and I would suggest that a section on Orthodontia be created. Properly it does not come under the head of any existing section, but is separate and distinct.

It would be well also to thoroughly revise the constitution. There are some defects not necessary to allude to here, which a committee would readily detect, and of which all the ex-presidents are aware. The principal one is its vagueness in setting forth the duties of the officers and committees. I do not make this last suggestion to bring about the discussion of the constitution, for we wish to embody nothing new, but simply to make plain that which we already have.

I have called attention to these things, gentlemen, because of my deep interest in the continued advancement of our profession and the preservation of its dignity.

In the name of those who have shed luster on that profession let us be faithful to our sacred trust, transmitting to those who will succeed us an honorable record of duty faithfully performed.

On motion of Dr. J. Y. Crawford, a committee of three was appointed to consider the President's Address and present it for discussion. Drs. Chisholm of Alabama, Lawrance of Georgia, and Marshall of Arkansas, were appointed on this committee.

On motion of Dr. M. C. Marshall, Dr. Augspath, one of the founders of the association, but who has been absent from its meetings for many years, was reinstated into full membership on payment of one year's dues.

Dr. W. W. Walker, Chairman of the Executive Committee of the World's Columbian Dental Congress, made a report of the work accomplished. He said that it would be impossible in the brief time available to give any detailed account of what has been done, is being done, and is intended to be done by the various sub-committees which have been organized and are hard at work.

As an illustration he would only say that Dr. Taft, Chairman of the Committee on State and Local Societies, is now in touch with every reputable dentist in America. This alone indicates the vast amount of work accomplished by one committee only. The Committee on Finance, of which Dr. L. D. Shepard, of Boston, is the Chairman. Without wealth at command the work of the organization would amount to nothing. Money must be had to run it. He hoped that all would become active members, and go down into their pockets as deeply as their purses would allow. He hoped that nothing would ever occur to mar the friendly feelings now existing between the different associations, but that all would meet in Chicago in 1893, joining hands as a happy band of brothers, working together for the general elevation of the profession at large.

At the afternoon session the Committee on the President's Address reported their indorsement of the views presented on the subjects of Dental Ethics and of the functions of State Boards, but begged respectfully to differ with him on the matter

of the Dental Chautauqua movement, admitting, however, that the question as to the feasibility of locating at all was an open question but worthy of mature deliberation. The subject of revising the constitution they deemed of the utmost importance, especially in the matter of more clearly defining the duties of committees, the present form being vague and indefinite.

The President's Address was then discussed at some length by Drs. Catching, Chisholm, R. R. Freeman, McKellops, J. Y. Crawford and Peabody.

Dr. Catching thought the colleges could not be fairly held responsible for the actions of their graduates. Dr. Freeman held the contrary view. He said that man was naturally an imitative animal, and from childhood up endeavored to follow the example of those to whom they look. The application is evident. Dr. McKellops spoke of the lamentable lack of business qualifications in the average dentist. Every man, even if he be a dentist, must make money for the support of his family. For this reason he should associate more with business men. He should take an interest in public affairs, and be a good citizen, thus elevating himself both from a business and from a social standpoint. He did not favor the idea of a permanent home for the association, which would soon become an old idea, and men would stay at home, benefitting neither themselves, the profession nor humanity.

Dr. Crawford spoke very earnestly upon the violations of the code of ethics, especially in the endorsement of patent nostrums—not alone by members of the dental profession, but especially by the clergy, who, while denouncing drunkenness, sign their names, and even permit their portraits to be appended to endorsements of patent medicines known to consist largely of alcohol or whisky. He believes that the injuries from patent nostrums are more far-reaching and baleful than can possibly be ascribed to the rum traffic, notwithstanding the \$900,000,000 annually expended on ardent spirits. As a practical fact no man ever received benefit in a professional way through improper advertising; sooner or later it redounds to his injury. He hoped to see the day when the ethical code would be so pronounced and so

strong that neither the professional man, preacher nor editor would dare to be a party to a fraud simply because he was paid for it. He said that he hoped the subject of a Committee on Orthodontia, recommended by the President, would be brought up and acted upon. There was not one other question in the whole subject of pediatries of so much importance to the human family as Orthodontia, and he hoped an active committee would be formed.

Prof. Peabody said that no legislature could legislate a man into a gentleman. Men who boldly blow their brazen bugle-blasts make us ashamed of our profession. But we cannot overcome this hydra-headed monster though we may decry it most heartily. We feel ashamed to acknowledge our profession because of its prostitution. We must educate the public to understand that from such men they will not receive value for services rendered. If they put themselves at the mercy of charlatans they can only expect future misery—they will get only what they pay for.

Dr. B. Holly Smith, of Baltimore, read an elaborate report, as Chairman of the Committee on Dental Education, of which the following synopsis is given. While recognizing the debt of gratitude due to the dental laws and efficient dental boards of the different States, constituting a complete and adequate machinery adapted to the work of excluding imperfectly prepared candidates from the profession and forcing constant elevation of the standard of requirements for entry into the profession, he said that individual and collateral questions were arising whose adjustment involves the rearrangement of some of the machinery that has been provided for the protection of the profession and the public. For decades and centuries, the history of progress itself has been the history of some famous colleges—the story of its development, its conservation of what was valuable in knowledge, its propagation of what was alive and fructifying in thought. The similar influences of our dental colleges should not be underestimated. The position of Examining Boards is the direct outgrowth of a law designed not primarily for the elevation of the standard of dental education—that being an

indirect and incidental effect—but for the protection of citizens from the evils and injuries which they may receive at the hands of incompetent and ignorant practitioners. All dentists are deeply interested in the proper execution of such laws, for as citizens they desire the amplest protection, and as professional men they desire to be spared the shame and mortification attendant upon the blunders and mishaps of the ignorant and incompetent. While it is a source of pride and congratulation that the execution of these laws has been entrusted to most competent and efficient Boards of Examiners, who have thoroughly and conscientiously discharged their duty—that the gentlemen composing these boards have recognized this double duty to the State and their profession, and have discharged their functions in a manner calculated to protect the interests of the one and to advance and elevate the standard of the other—yet there is nevertheless some slight inharmonious among the elements that should work together for the good of all concerned, viz., the citizens (or patients), the profession, the colleges, and the student. As citizen to citizen we have discharged our responsibility when we have afforded protection from quacks and charlatans in granting license only to those possessed of the requisite knowledge and skill. In this matter the power of boards is entirely discretionary; its exercise may become either perfunctory or prohibitory. The standard must necessarily be shifting, while examinations alone can not always establish the fitness for or unfitness of the candidate. He may be unable to discuss theoretically what he understands practically, or to *say* well what he can often *do* excellently. If a test such as an Examining Board can give is to be accepted as efficient and satisfactory, certainly a test extending over three years and covering every variety of instruction and practice he is likely to meet with in practice, must be more so. The conclusion then is that “a diploma from a competent faculty, granted after three years of faithful study and initiatory or student practice, should have a preponderating weight in the establishment *vel non* of a candidate’s fitness to practice his profession.” How can we expect the diplomas of American Colleges of Dental Surgery to be honored in Europe

when they are not properly estimated in our own country? As professional men, the elevation of our profession is the aim towards which all our efforts are bent. We have had a hard fight to secure proper recognition among the learned professions, as seen in our recent classification among tradesmen in the collection of census statistics. This incident shows how continually we must be on the alert, and that we have those in our ranks who are both watchful and progressive. The profession rightfully claims from the colleges an adequate and thorough course of instruction, competent and scholarly instructors, and honorable, conscientious labor. And the pledge of the colleges—a sacred and solemn pledge—is to eliminate, by thorough and conscientious instruction, the immature and unadapted from the ranks of those seeking entry into dentistry. The responsibility of colleges must of necessity be higher and greater than that of Examining Boards. The former undertakes to prepare, the latter simply to exclude. They incidentally guard the profession while protecting the public at large. Their work for the advancement of the profession, however, has been none the less distinguished because indirect and incidental. That the student has just claims upon us no one will deny, and while we gently require of him ability, adaptability and adequate preparation, it is just as much a matter of convenience and of duty to make sure that we do not, whether through pedantic blundering or honest errors of judgment, exclude the capable, the earnest, the ardent, the enthusiastic, the prepared, for these are they whose work shall reflect honor and glory upon our loved profession.

Many a young man, purposing to enter dentistry, is now, in his present relation to the unrelated and unconnected college and Examining Board “between the devil and the deep sea.” While convinced that the proper place to study dentistry is at some reputable dental college, yet right before his eyes he has college graduates whose diplomas, in the hands of an all-powerful board, have been as “clay in the hands of the potter,” neither a defense nor an honor. Why should he not say: “What is the use of wasting my time and my money in going to college and attempting to prepare myself by a three-years’ course of study

and practice for my life-work, when the evidence of that work weighs as nothing with the examiners?" And the disgrace of failing! The poor plucked wretch may conclude, with some justice: "I don't see how that examination is a fair test of my ability to practice dentistry. There were many important and essential questions I did not know and was not asked about. This examination may have shown this board what I don't know, but may I be elevated if it showed what I do know?"

All this must conduce to undervaluation of systematic training and continued study, and opens the door to irregularities in proportion, and a consequent lowering of grade in requirements, skill and science. As an effort towards the adjustment of these somewhat incongruous elements with a helpful and healthful harmony, the final proposition made by Dr. Smith is briefly, the examination of candidates for graduation by the Examining Board of the State in which the college is located, as severe as the board may choose to make it (the college being competent and willing to meet the test), the student feeling when he has graduated under these test conditions that he has earned the right to go forward in his profession, earning, in the daily exigencies of his work, more than either colleges or boards can teach him. Freed from the thought of examination after examination hanging over his head, he will rely upon faithful study and adequate preparation rather than an uncertain kind of ability to perform those mental gymnastics miscalled examinations.

This subject was discussed by Drs. Chisholm, Browne, of Atlanta; Wright, of South Carolina; Turner, of North Carolina; Jones, of Florida; Young, of Alabama, and others, being continued at the night session of the first day.

Dr. E. S. Chisholm spoke of the necessity which had compelled the enactment of dental laws and the creation of Examining Boards, because of the inability and poor preparation of many of the earlier college graduates, and in the vast improvement in late years, which justifies the hopes that it will soon be possible to admit all three-course graduates to practice without examination.

Dr. W. C. Browne said there was no clash between the boards and the colleges, the influence of the former being wholly towards a higher education, uplifting the profession and stimulating the colleges to greater endeavors. When the boards report students deficient in certain lines the colleges work up on those lines and students come out better qualified.

Dr. V. E. Turner thought it impracticable for students to be examined before the Board of the State in which such college is situated, because he does not always propose to locate in that State, and the laws of the different States are not the same. A student after he is thoroughly prepared and has stood his college examination should have little difficulty before a State Board. When fresh from college he will probably be "up" on all technicalities.

Dr. J. N. Jones thought the laws should be uniform in all the States, and the license of one State Board should be good in all the States; that there is too much red tape about the business. A man may cram and pass an examination without being qualified to practice dentistry.

Dr. R. C. Young considered the three-term course of the colleges the most gigantic step taken by the profession, and that it was brought about entirely through the influence and efforts of the State Boards. He spoke of the extreme severity of the Alabama State Board, and thinks that in the course of a few years young men will come from the college so thoroughly prepared that Examining Boards will be such only in name.

On motion of Dr. S. B. Cook the President's Address was ordered published in a daily paper of Chattanooga for the instruction and enlightenment of the people, who ought to know something of what we are doing.

In closing the discussion at the night session Dr. B. Holly Smith said that his friends desired that he should put himself right, as a false impression had been created, namely, that as a college man he had expressed opposition to the Examining Boards. This was a false impression as he had intended nothing disrespectful or unkind. They had done much that was laudable and commendable, and had endeavored to harmonize and

establish proper relations between the profession and the colleges. He would rather have those who had been under his instruction pass before the most strict and rigid board than have them go out unprepared. He said: "When I have worked with a man for three years I know what he knows, and though he may become paralyzed through nervousness and fail before his State Board, that does not prove that he is not fit to practice dentistry.

Dr. E. S. Chisholm said the men on the State Boards did not claim to be teachers, and perhaps they do not always know how to formulate questions, but they honestly try to bring out the knowledge of the applicants to the best of their ability. If a young man cannot tell whether or not a child has deciduous bicuspid, or thinks it will take about five years for a broken off corner of a tooth to build itself up again—such a young man is not properly prepared even if he is a college graduate. Stricter requirements we need on chemistry and etiology, and the attention of the colleges should be directed to these two branches especially.

The report of the Committee on Prosthetic Dentistry being called for it was found that the chairman was not in attendance and had furnished no report, neither were there any papers before that section.

Dr. R. R. Freeman, Nashville, Tenn., said what he had designed to form a portion of the chairman's report was intended to be woven in as a part of the whole. He asked the question, When, from the ravages of decay, the whole, or a portion, of the organs of mastication have been lost, what shall be done to restore the loss, and bring about the nearest possible approach to natural function? The most important step is to suspend, as near as may be, the devastations of the destroying agents by removing them, or by counteracting their influence, affording nature a chance to assert her supremacy. After restoring the parts to a physiological condition, the mechanical arts aid us to furnish a substitute that will harmonize in appearance, feeling and function with the surrounding organism. In the construction of these substitutes there are mechanical laws which must be

understood and applied. While the principles of mechanics are unchangeable we must also remember that we are dealing with living structures subject to physiological and pathological changes.

A clear plan must first be outlined by intelligent study of the case of what it is desired to accomplish. In the accomplishment of your plan there are a few minor points to which your attention may be profitably directed. In the selection of an impression cup never hesitate to cut, bend, or twist one, or even construct one especially for the case in order to make it conform to what you desire. Never let the impression material extend beyond the margins of your cups, or you will have imperfect margins. The ideal cup should come within the thirty-second part of an inch of touching every part on which the body of the plate is to rest, the palatal border resting in easy contact. When the cup, with the impression material, has been placed in position in the mouth, the cheek should be drawn out, and the lips first down and forward and then pressed upward, bringing the plaster firmly against the alveolar border, before the plaster begins to set. While the cup is held up with sufficient firmness to prevent displacement there should be an apparent movement as though to draw it downward and outward so that the muscles will be relaxed. If driven up too tightly the tissues will be hard and compressed unnaturally. Of course it cannot actually be held up and drawn out at the same time, but the pressure should be exerted as though it were about to be drawn out.

When the teeth are set the plane of mastication should fall lower in the rear than in natural occlusion, and there will be less likelihood of displacement during mastication, and the tendency of the plate will be to become firmer with use. A cup for the lower plate should have deep wings extending below the line where the plate is to rest to avoid enfolding the mucous membrane, and pressing away the tongue at its base. A lower plate should always extend well back and up along the ramus to prevent wobbling in the mouth. A well defined ridge extending around the border, say within one-eighth of an inch of the gum margin, will assist greatly in retaining it in position. This

is easily made, after the teeth are waxed up, by using a piece of wrapping twine which has been saturated in wax, made to adhere just where you want it by a puff of the blowpipe flame. When reproduced on the plate it will afford a line on which the lip will take hold, causing it in many cases to adhere with great tenacity to the jaw.

The president said he hoped that in the absence of papers the subject would be discussed, as it had been greatly neglected in the association.

Dr. A. P. Johnson, (S. C.) exhibited the model of a device for keeping the lower plate in place.

Dr. Browne (Atlanta) instead of pressing and holding up an impression cup, tells the patient to bite it up and hold it steadily in position himself, thus relieving both patient and operator from the usual uncomfortable position while waiting for the plaster to set. When the tissues are very hard he lines a portion of the surface—varying from the dimensions of one air chamber to the whole surface in extreme cases—with soft, flexible English rubber. In finishing it up it is scraped until the color of the flexible rubber can be seen through the hard rubber surface which is necessary for the polish. This method will make the plate adhere in the most difficult cases. It is equally valuable in lower plates.

A number of satisfactory cases of the Marshall Anchor plate were cited by members of the association who had been using it since the patent was given to the association by Dr. Marshall a year ago. This method was discussed by Drs. Morgan Adams, Catching, Thompson, of Atlanta, Dotterer, A. P. Johnson, Chisholm, Marshall and others, the plate having given universal satisfaction, especially when anchored to one tooth only.

Dr. Geo. Evans (New York City) described his method of making a double crown or cap. After adjusting a gold crown to the tooth in the mouth, he removes it, and winds around it a piece of paper which he fastens with a wire or string. Into this he pours Melotte's fusible metal, making a die on which to make his telescoping cap. On this he winds No. 30 to 32 pure gold wire, binding one end over the top of the crown. This he

solders; soldering on the outside a narrow strip of No. 32. Any danger of solder flowing inside of the telescopic cap can be obviated by painting it with whiting. When all is finished, a little fusible metal is melted in a cup and the crowned die dropped into it, when the gold crown will float and can be picked out. If any of the fusible metal still remains, the crown can be immersed in nitric acid, which will remove the last particle. He finds this a clean and accurate method.

Dr. Beach (Clarksville, Tenn.) adapts a band to the curve of the crown of a tooth to which a plate is to be attached. On this band he telescopes the band of the plate. Removing the band from the tooth he fills it with plaster and wraps around it No. 40 tin foil, marking where the telescoping band is to come. With the tin foil he thus makes a pattern by which to cut the gold. When the gold is soldered and burnished down on the crown it makes a very perfect fit, and is done as quickly as the telling. A lug or attachment for securing it to the plate is soldered on afterwards.

Dr. Thompson (Atlanta) after cementing the crown on the tooth gets a metal model of the tooth with the crown on. To this he adjusts a 22 carat band which he slips off and solders, bending the ends back in opposite directions giving good attachment to the rubber of the plate. The bands fit the teeth perfectly, and yet slip off readily. He casts a tin model directly from the impression, and if any accident happens to the plate there is no necessity for taking another impression. He uses pure block tin which melts easily and does not tarnish.

Dr. S. B. Cook (Chattanooga): To make a perfectly smooth metal model, smoke the plaster impression in the flame of a tallow candle and the metal will flow perfectly smooth.

Dr. Browne (Atlanta) uses tinner's solder, instead of pure tin, as it is more easily obtained. He takes his impression and sets it on the stove at the same time with the ladle of metal. By the time the metal is melted the plaster will be dry enough. The metal must be poured in slowly as it hardens dropping it in and building it up the sides of the flask.

Dr. Cook in case of undercuts or overhanging margins lays strips of isinglass (mica) across with the ends sticking out. This divides the model into sections which can readily be put together in position.

Dr. Freeman to support a telescoping band when you have sound roots a Richmond or Logan porcelain crown may be used, attaching the plate by clasps to the porcelain crown.

The morning of the second day was set apart for clinics. The election of officers was held at the afternoon session with the following result: President, Dr. B. Holly Smith, Baltimore, Md.; First Vice-President, Dr. R. K. Luckie, Holly Springs, Miss.; Second Vice-President, Dr. S. B. Cook, Chattanooga, Tenn.; Third Vice President, Dr. L. P. Dotterer, Charleston, S. C.; Corresponding Secretary, Dr. D. R. Stubblefield, Nashville, Tenn.; Recording Secretary, Dr. S. W. Foster, Decatur, Ala.; Treasurer (re-elected), Dr. H. E. Beach, Clarksville, Tenn.

Dr. J. N. Crouse (Chicago), President of the Dental Protective Association, was then introduced by the President and proceeded to address that body in the interest of the association he represents, this being his first visit to the Southern Dental Association, and his first trip so far south in this country.

His address was listened to with close attention and at its close a vote of thanks was tendered to Dr. Crouse for the work he has done for the dental profession, and the hearty and earnest support of the Southern Dental Association pledged.

The subject was discussed by Drs. Dotterer, McKellops, Freeman, Peabody and others, and at its close, on motion of Dr. W. H. Richards (Knoxville, Tenn.), Dr. Crouse was elected an honorary member of the association with a rising vote and applause.

On motion of Dr. R. K. Luckie a committee of three from each State was ordered appointed to bring the Dental Protective Association to the notice of members of the profession throughout the South with the expectation of doubling, if not trebling the membership when the territory is properly canvassed.

Thursday morning was devoted to clinics. At the afternoon session Dr. B. Holly Smith addressed the association on the

subject of the Wilcox Bill—a bill, he said, constructed to compel dentists to give in statistics as ordinary mechanics and manufacturers, whereas they are to be classed as professional men of scientific attainments. He related the history of the fight that has been made against the bill, and the result obtained—namely, the agreement on the part of the Chief of the Census Bureau that no dentist, surgeon or lawyer shall hereafter be called upon for such statistics.

Feeling a jealous regard for the rights of the Southern Dental Association, he felt that she should have the honor of joining the American Dental Association in meeting the expenses of this fight for rights by which we are equally benefited.

The following protest and resolutions were read and adopted :

A PROTEST AGAINST THE CENSUS CLASSIFICATION OF DENTISTS  
AS MANUFACTURERS.

WHEREAS, It has come to the knowledge of the members of the Southern Dental Association that House Bill 7696—known as the Wilcox Bill—passed the House of Representatives June 4th, 1892, and is now before the Senate for action, and that said bill provides for the collection of statistics from incorporated and unincorporated companies, firms, associations or *persons engaged in any productive industry*—and according to the classification of the superintendent of census of 1890, appointed by the Secretary of the Interior, dentists are classed as manufacturers.

*Therefore*, Be it resolved that we protest against the collection of statistics from dentists as manufacturers, or as the bill has it, “persons engaged in productive industries.” Dentists are not manufacturers in any sense, not being engaged in any form of fabrication, or the sale of any product having a merchandisable value. The laws regarding the practice of dentistry in the various States and Territories and in the District of Columbia, distinctly recognize dentists as professional men, and the attempt to collect statistics from dentists as manufacturers will not only be an injustice to dentists and their patients, but useless to the government as showing the productions of a class of men

not engaged in manufacture, and an erroneous interpretation of the spirit of the bill.

On motion of Dr. B. Holly Smith a committee of three was appointed to correspond with the chairman of the committee which has accomplished this work, and with the committee of the American Dental Association to raise funds for defraying the expenses of the fight.

Dr. W. J. Barton (Paris, Texas), Chairman of the Committee on Pathology and Therapeutics read the report of that committee.

ABSTRACT OF DR. BARTON'S REPORT AS CHAIRMAN OF THE  
COMMITTEE ON PATHOLOGY AND THERAPEUTICS.

Dr. Barton reported, from this section, a paper on the Care of Children's Teeth, from Dr. Foster, Decatur, Ala.; a paper on Nitrous Oxide in Cardiac Weakness, by Dr. Sharpe, Knoxville, Tenn.; a discussion on the Therapeutic Value of Electric Currents, by Dr. J. S. Marshall, Chicago, Ill., and a discussion on the Persistent Effects of Medicaments Sealed over the Dental Pulp, by Dr. B. H. Catching, Atlanta, Ga.

Dr. Barton, in his report, spoke of the advisability of cultivating the fraternal relations which ought naturally to exist between dentists and physicians. To ignore and disparage the physician is to destroy the growing recognition of dentistry on the part of the general practitioner, for while it is true that dentistry is technically recognized as "a specialty of medicine," it yet remains to be made practically so.

Dr. Barton mentioned as among the exciting causes of pathological conditions of the gingival borders and the peridental membrane, the ill-fitting and impinging bands in crown and bridgework, especially where more regard is paid to appearance than to healthful conditions. Another cause of pathological conditions is found in too great pressure from rubber dam clamps, producing a diseased condition about the necks of the teeth, which soon develops into caries.

Pathological conditions of the peridental membrane may result from the animal matter remaining in the tubuli of the den-

tine after pulp removal, indicating the necessity for extra precautionary measures in the way of antiseptic treatment and permanent antiseptic dressings. The pathological condition known as Sensitive Dentine may be an inflammatory condition resulting from the loss of enamel or other protecting tissues, or from inflammation of the pulp. A metallic filling may not be, and probably is not, in itself a proper protection in these conditions. Permanent oily dressings and varnishes, and other non-conductors, are indicated, and the use of nitrate of silver where fillings are not applicable, or where the teeth are too sensitive for proper excavation, especially in the teeth of children.

Dr. S. W. Foster (Decatur, Ala.) here read a paper on Children's Teeth. He dwelt upon the pathological conditions of dentition and the treatment of the deciduous teeth. It is to the proper care of the deciduous teeth that the permanent teeth are made to subserve the purposes for which they were created and the arches filled with properly occluding and perfect permanent dentures. This accomplished the dentist may feel that he has achieved a glorious success, and it is the exception when such results cannot be reached with proper treatment. And yet it is alarming to note the indifference with which the majority of our dentists have treated this subject, though there seems now to be a progressive movement along this line. He said, if by adding my mite I can induce some who have treated this subject with indifference to become more earnest in the care of the deciduous teeth I shall feel that my services have been well rewarded. It is gross neglect on the part of the dentist to fail to disseminate among parents a knowledge of the pathological changes accompanying dentition, and the therapeutical and surgical treatment necessary, and yet, who among us fails to have presented daily children whose mouths are filled with decayed teeth, chronic abscesses, suppurating sinuses and vitiated secretions—seething pits of filth, generating bacteria and disease enough to break down the most robust constitutions. What are we to do to bring about a change in their conditions? First, we must have the perfect co-operation of the parents. Children should hear no more tales of the cruel tortures inflicted by that horrid dentist,

and they would no longer come to us as into the hands of the executioner. We must give these little patients time and consideration, deal with them by persuasion, gentleness, and yet firmness; make them feel that we are their friends, and that what we would do for them is for their good, and the victory is soon won. Though we cannot control pre-natal conditions we must educate the people, making parents realize their duty to their children from a pathological and therapeutical standpoint. Insist upon it that our public schools teach the rising generation the pathological as well as the physiological changes to which the teeth are subjected. Could such a course of study be given the children of to-day the parents of the future would feel the necessity of caring for the children's teeth. The greatest number of deaths occur among children during the period covered by first dentition, growing more out of the condition of the oral cavity than from any other cause, for though our most noted authors hold that dentition is strictly a physiological process, yet it is an exception when we do not find pathological attendants. Such conditions during dentition as flushed cheeks, restlessness, loss of appetite, fever, swollen and inflamed gums, otitis, vomiting, diarrhoea, convulsions, often culminating in death, cannot always be a mere coincidence, but must to a great extent be recognized as the pathological attendants of first dentition. Pure, healthy food is the first essential prophylactic measure. Unless imperatively prohibited by circumstances the child should be fed entirely from the mother's breast until dentition is completed, that is, until we have an unbroken row of teeth, above and below. It should have an abundance of free exercise, fresh air and sunshine, and by all means, the oral cavity as well as the entire body kept scrupulously clean. With these simple precautions we may look for well-organized teeth, freedom from constitutional disease and that very prevalent trouble the, urinary diathesis. He said, when the gums are swollen and inflamed I am an ardent advocate of the gum-lancet, from my own observation of the good results following its use. Perfect cleanliness is the great preventive of decay. Could the mouths of children be kept in a sterilized condition until the age of fourteen

years, and the idea of oral cleanliness instilled into their minds, caries in after years would be the exception, not the rule. In placing the mouths of children in a sanitary condition all stains should be removed by the use of a soft brush and pumice, and I have seen good results follow the application of pure wood creosote, after polishing, as recommended by D. Nael—the beech-wood creosote—not the commercial article. Never remove deciduous teeth prematurely. Treat and fill with some of the plastic filling material, and retain them till the natural time for shedding through the absorption of the roots.

If we were more fully impressed with the fact that the deciduous teeth were designed to fulfil the same mission for the child as the permanent set for the adult, we would be more considerate in their care and preservation. There is no more important element entering into the development of the growing child than a perfect digestive apparatus, and this it cannot have unless mastication is good, and no child can properly masticate without all its teeth, or with decayed and aching teeth. The temporary teeth cannot be extracted previous to the development of the sixth-year molars without a resultant disarranged and crowded arch when the permanent teeth appear. In the language of another: "It matters not what an unappreciative world may say of us, our work will certainly bear leaf, flower and fruit, which bursting forth, in the end will show in part how far reaching is the range of usefulness to which the dentist may justly lay claim."

Dr. S. P. Sharpe (Knoxville, Tenn.), read a paper entitled "A Plea for Nitrous Oxide in Cardiac Weakness." Admitting the necessity of protection from shock incident to sudden pain or even excitement in the case of patients suffering from any form of disease of the heart, Dr. Sharpe claims, after an experience of thirty years in its use, that nitrous oxide furnishes such protection and is therefore an agent that should be hailed with delight by suffering humanity. He said out of the vast number who annually take nitrous oxide there are not a few who are not more or less afflicted with disease of the heart, yet death is almost unknown. This being the case, ought it not to be proof

to any unprejudiced mind that the statements of its enemies are without proper foundation? At a low estimate, I have administered it to more than a hundred coming from physicians who had pronounced their hearts too much affected for any anæsthetic, yet I have never seen the first distressing case from its use in a practice that consumed more than forty thousand gallons of it each year.

But granting that a possible death might occur from its use I claim that the danger is so remote that in my judgment we would be likely to have almost as many deaths from shock in proportion to the number of operations, if we used nothing at all. He concludes, therefore, that the danger, if any, is not commensurate with the benefits derived from its use.

Dr. John C. Storey (Dallas, Texas), read an address on the subject of the Dental Chautauqua for the S. D. A. Dr. Storey would not, as so many propose, establish the home of the association in some far-away mountain gorge, or other health resort, but rather in one of our great cities. He would have it a chartered institution, with buildings sufficiently spacious for lecture halls, operating rooms, laboratory, museum, etc., with an auditorium sufficiently capacious for commencement occasions, association meetings, etc., with a faculty competent to teach medicine in all its branches; sufficiently endowed to free its members from all labor save that of teaching, giving their whole time to the school, with no practice save in consultations—a diploma from this S. D. A. school to constitute life-membership in the association. This school should be open at all times to members of the association who might wish to “rub off rusty spots,” or acquire the newest ideas—constituting in fact a true post-graduate school. The annual meetings of the association he would have held during the last month of the regular session of the school.

Further details of the plan were outlined at length by Dr. Storey looking towards the establishment of “an institution of learning such as no student has ever been privileged to enter, and to be an alumnus of which would be an honor to which no graduate has ever yet attained.”

Dr. John S. Marshall (Chicago), addressed the association, from notes, on the subject of Electricity as a Therapeutic Agent. He said that while electricity had a wide range in medicine and general surgery, in dental surgery it was lessened probably because its application was not so well understood. In his own experience he had found it had a specific value in the treatment of hypertrophied conditions of the pulp and dental membranes, of benign tumors of the gum and the alveolar process, using the continuous galvanic current, or the Farradic current as indicated by the conditions. The positive current produces anæmia and depletion; the negative, congestion and plethora; the Farradic current stimulates the absorbent organs, reducing hypertrophy and neoplasms. He uses the appliance of Dr. McIntosh, of Chicago. A little spring of bent wire with a small cup at each end fastened on the inside, and a copper wire running through. A small bit of sponge or absorbent cotton is placed in each of the cups, which are placed on either side of the gum or tooth, the electrode from the positive pole of the machine being attached to the opposite wire. The negative electrode is held in the left hand, or applied at the base of the brain. A galvanometer is used to measure the strength of the current, not more than three-fourths of a milliampere being used at first.

In hyperæmia of the pulp this is very successful, continuing the application from ten minutes to half an hour and very gradually increasing the current. The current should be light, but stimulant, using the continuous galvanic current. The Farradic current being an interrupted current would cause shock and increases hyperæmia, and is to be avoided. Such remedies as aconite, iodine, etc., may be used through the sponges, their action being hastened through the current, and they are more readily absorbed and rendered effective than by mere topical application. The Farradic current is used to test teeth for vitality. It is often extremely difficult to say positively whether a tooth is alive or devitalized. There may be no sensation through the cusps; the tooth may respond but vaguely to cold water or hot water, but if the Farradic current is applied through the positive pole you can make no mistake. A live

tooth cannot stand one-half a milliampere, while on a devitalized tooth the strength of the current can be increased to two or three milliamperes. He said, I cannot now go into the treatment of tumors and other uses of the electrodes, but you will find it has a very useful place in your armamentarium.

The subject of Pathology and Therapeutics was then declared open to discussion.

Dr. Barton desired to call more especial attention to the use of nitrate of silver in the treatment of children's teeth, and in arresting caries in the teeth of adults. He said all that has been claimed for it has been fully sustained in his experience. His experience was confirmed by that of Dr. Beach, Dr. Jones, of Fla., and others. Drs. Nael and Chisholm claimed that this was simply an old idea revived. Dr. Richards said that the old practice was to use it for reducing sensitiveness but not with the object of arresting caries.

Dr. Jones said that he had used it with the former object, but with the latter result to his surprise and gratification.

Dr. Catching (Atlanta) spoke of the effects of persistent medication on the dental pulp. When the nerve is not quite exposed a paper saturated with carbolic acid is often laid over the thin layer of dentine next the pulp, and the tooth immediately filled. This is bad practice, for the result is just what we want to avoid—the death of the pulp or a weary struggle for existence. Other means may be used to disinfect, but do not swab in carbolic acid, and the remedies used should not be confined in over a nearly exposed pulp.

Dr. ——— said the action of the nitrate of silver in arresting decay was through the affinity of the nitric acid for the water in the tooth, the silver being liberated and filling the tubuli of the dentine. Subject passed.

At this point a paper was received from Dr. Ottofy (Chicago) too late for consideration by the section of Dental Education.

On motion it was now read. The paper was entitled "Post Graduate Study" of which an outline is given here. Admitting the fact that the dentist who is not absolutely progressing is

certainly retrograding the necessity is obvious of some means of improving the head and the mind of the dentist in active practice while not removing him from the scene of his labors or interfering with his daily practice necessary for the support of his family. The Chautauqua system of home reading offers a solution of the difficulty, and similar courses of reading have been organized for the higher education of the dentist.

Arrangements have been made with the publishers for procuring books at lower than market rates, and membership in the association entitles the reader to these rates and also syllabus outlines of the contents of the book with instructions to be carried out each month. Any desired information or elucidation of obscure points will be furnished by the authors of the books selected, or by the officers of the association. At the completion of each course written examinations are required and certificates granted. The courses A, B, C and D, will include text-books graduated from the raw recruit, fresh from the dental college, to the oldest practitioners, and will include anatomy, physics, chemistry, bacteriology, dental jurisprudence and the highest of dental literature. The examinations will probably exceed anything heretofore known, and men whose reputations are established as scientists may tremble before Yale, Harvard, or even Oxford, Cambridge and Heidelberg examiners. Through this movement the elevation of the intellectual status of the profession must be attained and the effects will be felt in generations to come.

In the absence of the chairman of the committee on Operative Dentistry (Dr. Rollo Knapp) Dr. Nael read a paper sent by Dr. J. H. Allen, entitled "Some of the Causes of Failure in Gold Fillings," of which a brief synopsis follows :

Dr. Allen emphasized the importance of properly shaping a cavity and in certain cases of getting a tooth into its proper position before filling, illustrating the latter idea by describing a case in which a second superior bicuspid having a compound proximal cavity on the anterior and coronal surface extending well toward the gingival margin, and having been in this condition long enough for the first bicuspid to fall back until the con-

tour was lying somewhat in the cavity, the interdental space being nearly obliterated and the gum hypertrophied by compression. This case was presented at a clinic. The operator having removed the hypertrophied gum tissue, cut away a large portion of the tooth substance and adjusted the rubber-dam, asked the question of the bystanders, "How long would it take you to fill that cavity?" Various replies were made, ranging from one hour up, for the insertion of the gold in the already prepared cavity. Dr. Allen replied "three weeks"; saying, "That tooth is in no condition to fill until it occupies its normal and correct position in the arch, relieving the pressure on the interdental gum and alveolus, which will be augmented as it now stands by the separation for space and the subsequent finishing of the filling. This crowding of the parts will cause the death, not only of the intervening gum tissue but the destruction of the interdental alveolus by absorption, and you will have a worse condition, resembling pyorrhœa alveolaris, besides which the filling will probably fail at the cervical portion, and you will have a worse condition than before." In such a case Dr. Allen advocates separating with rubber, following it up by pledgets of cotton until the tooth was restored to its normal position, and holding it in place by means of phosphate between the teeth, so placed as not to impinge upon the gums in the least, filling only after all soreness was gone. He would fill with gold, using soft foil for two-thirds of the cavity, finishing with hard foil which can be finished and polished with plug finishers and then polishing tape, without cutting away any of the contour of the cohesive part of the filling. He would not use a matrix preferring rather to build against the other tooth if necessary and cut it away subsequently.

In cases when the cavity extends so deep towards the cervix of the tooth as to very nearly go beyond the enamel, the enamel will be found to be so very thin that the least downward pressure will cause minute particles to be broken away leaving little rough places. In such cases he would carry the cavity deeper and prevent failure at this point.

Excessive malleting is the next cause of failure mentioned, the continued hammering and pounding, often from two to ten strokes on the same spot, tending to powder up the tooth under the gold. These little disintegrated particles being washed out the gold appears to draw away from the walls of the cavity, and recurrent decay sets in. Another cause is overhanging fillings under the gum margin detected only by passing a thin, scythe-shaped instrument under the gum when it will catch on the shoulder of the overhanging filling with the inevitable result—*failure*.

Dr. E. C. Chisholm (Tuscaloosa, Ala.) next read a paper entitled, "Philosophical Ideas in Operative Dentistry," illustrated by diagrams. In this short paper he made application of two well-known principles in natural science in explanation of certain well-known difficulties encountered in anchoring fillings in teeth which are elongated and somewhat loosened in their sockets, or with no other teeth touching them, as is often found in advancing age or in the incipient ravages of pyorrhœa alveolaris. The paper was illustrated by a series of diagrams. In the operation of filling such a tooth as has been described, the instrument, the particles of gold in the filling and the opposite walls of the cavity are compared to a series of suspended balls numbered from 1 to 6, the instrument being No. 1, the particles of gold 2 to 5, the wall of the cavity No. 6. In the case of the balls it is a well known law that if No. 1 be raised and let fall upon No. 2 no apparent effect will be seen in Nos. 2, 3, 4 and 5, which will remain absolutely immovable while No. 6 will fly off from No. 5 as if it alone had been struck. In the operation of filling the elongated loosened tooth the blows of the mallet upon the instrument, or No. 1 of the series, will pass through the particles of gold forming the unmoved series 2 to 5, and be perceptible only in the terminal body of the series, the tooth itself, or No. 6, being forcibly driven away from the filling by the blow which was designed to impact the filling in the tooth. And the nearer the cavity, or the point upon which the blow is impacted, is to the cutting edge of the tooth, the greater will be the jar and the movement of the tooth, the power of resistance being least in

the point most remote from the apex of the root—the fixed pivotal end. If the instrument does not absolutely touch the filling at the instant of the blow the result is even worse as the series is lessened while each integral in the series loses somewhat of the power imparted by the mallet. If the instrument rebounds a double stroke is given which still further aggravates the evil. If a side stroke is given upon such a tooth it will be driven away laterally and the filling already partially condensed will be loosened and moved from its bed with a tendency to ride out upon its rounded base.

The remedy for these evils is, 1st in the use of hand pressure, or 2nd in properly supporting the tooth either by interposing a solid body between the loosened tooth and its neighbor, or by the use of Dr. E. Parmly Brown's clamps which brace several teeth together with inside and outside supporting bars. If the tooth stands alone it may be supported by the handle of a heavy instrument, which becomes the terminal body in the series, the filling and the tooth constituting the immovable numbers of the series.

Dr. Chisholm emphasized the statement that he regarded the mallet as *the only proper mode for the condensation of gold fillings*, illustrating the results of hand pressure and the mallet by the two modes of driving a nail into a plank, by driving with a hammer or by attempting to press it in with the *handle* of the hammer. The results from the use of a crooked instrument will be even worse—unstable and unsatisfactory.

Another law of which Dr. Chisholm made application in the use of crooked and angular instruments is that *the angles of incidence and reflection are the same*—the application of the principle being obvious though not easy to describe without the aid of a diagram.

Dr. Francis Peabody (Louisville, Ky.) read a paper entitled, "The Application of Vapor under Pressure for Diseased Tissue." This is a new method of treating pulpless and diseased teeth. An appliance consisting of a small metallic cylinder, through which passes a metal tube, one extremity having an ordinary syringe point, the other connected by a rubber tube to a syringe

bulb. The cylinder is to be partly filled with coarse crystals of non-agglutinated iodoform and heated over an alcohol lamp or gas jet till the iodoform is fused. The syringe-point being placed in the root canal or pulp chamber of the dead tooth the rubber bulb is compressed and the iodoform vapor thus forced into the canal, permeating every portion of it and even filling the tubuli with a precipitate of iodoform, making a solid, insoluble filling, much more thorough than can be done with any plastic material. The whole tract of the canal and its contents are thoroughly dessicated and septic matters absolutely destroyed, the vapor passing through the tubuli and the apical foramen any inflammation or irritation existing in the peridental membrane is subdued, the tooth, if loose, being restored to a firm position in the alveolus. This method of treatment is found of special value in the treatment of blind abscess, diseases of the antrum and pyorrhœa alveolaris. The precipitate also forms a successful capping for exposed pulps. The objectional odor of iodoform may be to some extent disguised with caffeine, menthol or oil of lemon. After further experiments some other drug free from this objectional feature, but equally valuable in results, will probably be discovered. Iodoform, however, used in this manner has proved to the writer to be a valuable acquisition in a number of apparently hopeless cases.

Dr. Noel next read a paper sent by Dr. Théo. F. Chupein. The paper, which was without title, embodied a number of practical points and valuable hints. In the application of the rubber dam in a case where decay has progressed far under the gum on one side of the tooth while the gum is in normal position and firmly adherent to the neck of the tooth elsewhere—to overcome this difficulty Dr. Chupein says—pack gutta-percha at the distal and mesial surfaces of the tooth—when the gum is forced away from these surfaces remove the gutta-percha and wrap gilling twine or ligature silk two or three times around the tooth pushing it well up on the neck of the tooth—replace the gutta-percha on the proximate surfaces. After a day or two the gum will be found well forced away and the dam may be applied without difficulty. In cavities that cannot be kept dry gutta-

percha covered with a very light film of oil of Cajeput can be packed into the wet cavity as a temporary filling, or even as a permanent filling when not subject to the attrition of mastication. When it becomes necessary to repair a large gold filling the surface of the gold may be dried and annealed as follows: A small drop tube with rubber bulb is filled with cotton lamp wick with the merest end of wick projecting from the point. Placing the point in alcohol, by pressure on the bulb sufficient alcohol is drawn in to moisten the wick. This will produce a minute, almost imperceptible flame, by means of which with very little, if any, discomfort to the patient the filling may be made so dry that fresh gold will adhere to the old filling if the surface is slightly roughened. This is the device of Dr. Beacock, of Brockville, Canada. The use of nitrate of silver in arresting decay, by applying it in powder, rubbed into the disorganized dentine, filling over it with gutta-percha, was recommended as having been successfully used.

A paper from Dr. T. H. Parramore (Hampton, Va.) on the use of Sterilized Sponge in Pulp Capping was next read by Dr. Noel.

At the meeting of the association at Old Point Comfort, in August, 1887, Dr. Parramore read a paper describing his method of capping exposed pulps by the use of a bit of sterilized sponge affording a nidus to catch and hold the bone-forming product of the pulps in position where it will protect, instead of forcing the irritating nodules of osteodentine, apparently the result of unsuccessful attempts of the pulp to protect itself. What was then scarcely but little more than a theory is now a practical success, one hundred and fifty cases closely watched during the intervening years showing but twenty-three failures. In one case, a pulp exposure upon the anterior surface, was capped by this method in 1886. In 1891 the living, healthy nerve became exposed by decay in a crown cavity, the pulp being found perfectly protected on the anterior surface. (This extracted tooth was sent for examination.) In treating by this method, the cavity is carefully prepared, all foreign matter being removed. The fingers, the dam, the cavity, the instru-

ments are carefully sterilized with bichloride of mercury prepared as follows: Acid hydrochlorici, 1 drachm; hydr. bichloridi, 1 drachm; alcohol 1 drachm. M. Sig. Ten drops to one ounce 1-500 per cent. solution.

The sterilized sponge is not allowed to come in contact with the fingers but is held in oil silk and a small bit torn off with sterilized pliers and carefully applied at the point of exposure, and the cavity filled with oxyphosphate. When satisfied as to the result the permanent filling may be put in. Dr. Parramore says that at first he waited several weeks or even months, but he now usually fills permanently immediately, or at most, in a few days.

Dr. Wm. H. Cooke (Duston, Texas) sent a short paper giving his method of making combination fillings of oxyphosphate and amalgam in all molar and bicuspid cavities. Much frail enamel that would have to be cut away if all amalgam were used, can be saved by this method; perfect contact with the walls of the cavity is secured and the natural color of the tooth is retained, the teeth also lasting longer than when amalgam alone is used. The oxyphosphate is mixed to nearly the consistence of putty and about one-third of the cavity filled. While it is still plastic, amalgam in small pieces is introduced and burnished in with the engine burnishers, making a perfect amalgam margin.

At the last morning session a paper by Dr. J. L. Mewborn entitled, "Is it True that the Machine Mallet Pulverizes the Hidden Margins of Enamel," was, at his own request, read *by title*.

Dr. Noel exhibited and explained the merits of a variety of forms of apparatus for the administration of anæsthetics, including the Hayes apparatus, S. S. White's new inhaler for nitrous oxide gas, by the aid of which a little atmospheric air is admitted to the first few inhalations; an apparatus for the exhibition of ether used by John Wyeth; the Barr inhaler, and others.

On motion, Dr. Freeman, at the suggestion of Dr. B. Holly Smith, in courtesy to those who were obliged to leave in order to reach Niagara Falls in time for the meeting of the American Dental Association, the order of business was suspended, and the next place of meeting balloted for. The vote was unanimous

for Chicago. The exact date was left to the Executive Committee, but will be fixed with reference to the World's Columbian Dental Congress.

Dr. E. S. Chisholm offered a resolution, in view of the present unsatisfactory method of conducting clinics, that "A Committee be appointed by the president, who shall arrange and revise methods, requiring all members to be comfortably seated in front of clinics, and good order be preserved during clinics, and that such clinicians be selected as are competent, both to instruct and render due explanations of each operation in its minuteness and detail." The resolution was unanimously adopted.

Dr. Chisholm said that as clinics are now conducted only a few men are benefitted; nine-tenths of the members are talking politics and telling anecdotes and losing the greater part of two days—a loss of both time and money.

Dr. Dotterer said that very much depended upon the chairman of clinics; also that each operator should bring his own instruments and everything that he expected to need.

He offered a resolution that the Clinic Committee be appointed in the same manner as the Executive Committee, to serve for one, two and three years. In this manner the man who has served on the committee for two years will be competent to act as chairman in his third year. The resolution of Dr. Dotterer was adopted and Dr. E. S. Chisholm appointed for one year, Dr. L. P. Dotterer two years and Dr. Noel three years.

Dr. Crawford said he thought he was one of the first to introduce what are known as oral clinics. Let the clinician give first a diagnosis then a prescription. This much will be sufficient for many who are proficient in manipulative details. They may retire while the actual operation is performed for the benefit of those who do not fully seize the idea from the oral demonstration.

Dr. A. P. Johnson said it was not necessary for an expert operator to watch another pick up every particle of gold and pack it away in a clinic. One oral clinic is worth more than fifty times the actual performance of the work.

Dr. Richards offered a resolution for the permanent employment of a stenographer for the association whose duty it should be to furnish a synopsis of each day's proceedings for revision by a committee before publication in the daily papers. He should be one who would make himself familiar with the technicalities of the profession.

Dr. Catching moved to amend by substituting reporter for stenographer, as some of the best reporters ever employed by the association were not stenographers.

Dr. Beach moved to amend by substituting stenographic reporter. Carried.

Dr. John C. Storey (Dallas, Texas) spoke of the work being done by the Executive Committee of the World's Columbian Dental Congress and their lack of funds, and offered a resolution giving all the unappropriated funds of the association to the treasurer of the Congress. After some discussion *pro* and *con*, the resolution was amended by substituting the definite sum of \$200.00 and carried. The regular order of business was now resumed.

On motion, the subject of Operative Dentistry was passed.

The chairman of the Committee on Dental Hygiene being absent no report was presented.

The report of the Committee on Dental Histology was received, and the paper of Dr. E. P. Beadles read by title.

No report from the Committee on Dental Chemistry.

Voluntary essays received from Drs. Crews, Thackston and Chisholm, were read by title owing to the necessity for adjournment in order that members might reach Niagara in time for the American Dental Association. All papers read by title were ordered published in the transactions of the meeting, where they may be found under their proper titles, where also the reports of the Committees on Clinics and New Appliances will be found.

A letter from the venerable Dr. W. H. H. Thackston was read, and a message of greeting and thanks for his paper voted him.

The Committee on Necrology reported memorial resolutions in memory of Dr. John Allen, of New York, Dr. C. A. Kings-

bury, of Philadelphia and Dr. Wm. Deason, of Mobile, Ala. A page in the minutes was ordered inscribed to their memory.

Dr. E. C. Kirk, editor of the *Dental Cosmos*, then addressed the Association briefly, on the value of systematic work in the associations, and outlined a plan now being agitated in the American Association. A certain number of pertinent questions upon weighty topics, to be formulated and distributed among State and local societies, to form the basis of discussion during the year. A report of these discussions, being kept by the secretaries of the different societies, is to be forwarded to the chairmen of sections of the larger bodies. A digest of these reports will be reported to the body as a whole, and will offer material for discussion in that body, embodying the views of the profession all over the country. This must create an interest in the governing body, while each local society will feel that it is in touch with the parent organization, and delegates will be sent to see that local interests are looked after. This is not designed to interfere with the regular set papers, but as an additional feature, in order to get the co-operation of the whole dental body in association work. From this we would be able to formulate a system of practice wholly American. He concluded by saying:

“Dental literature is in your hands; you make it; the journals only disseminate. I hope the plan thus briefly outlined will meet with your favor, either in whole or in part.”

After the usual votes of thanks to the president, the railroads, the hotel and the ladies, and the formal installation in office of the officers-elect,—the president by proxy, he having left earlier in the day,—the Association adjourned to meet in Chicago in 1893—exact date left to the executive committee for future announcement.

## National Association of Dental Faculties.

The ninth annual meeting of the National Association of Dental Faculties was held at the Cataract House, Niagara Falls, commencing Monday, August 1, 1892.

Twenty-six colleges were represented as follows:

*Baltimore College of Dental Surgery*—R. B. Winder.

*Boston Dental College*—J. A. Follett.

*Chicago College of Dental Surgery*—Truman W. Brophy.

*Harvard University, Dental Department*—Thomas Fillebrown.

*Kansas City Dental College*—J. D. Patterson.

*Missouri Dental College, Dental Department of Washington University*—W. H. Eames.

*New York College of Dentistry*—Frank Abbott.

*Ohio College of Dental Surgery*—H. A. Smith.

*Pennsylvania College of Dental Surgery*—C. N. Peirce.

*Philadelphia Dental College*—J. E. Garretson.

*University of Iowa, Dental Department*—A. O. Hunt.

*University of Michigan, Dental Department*—J. Taft.

*University of Pennsylvania, Dental Department*—Jas. Truman.

*Vanderbilt University, Dental Department*—W. H. Morgan.

*Northwestern College of Dental Surgery*—B. J. Roberts.

*Louisville College of Dentistry*—Francis Peabody.

*Indiana Dental College*—J. E. Cravens.

*Northwestern University Dental School*—E. D. Swain.

*Dental Department of Southern Medical College*—William Crenshaw.

*Dental Department of University of Tennessee*—J. P. Gray.

*School of Dentistry of Meharry Medical Department of Central Tennessee College*—G. W. Hubbard.

*University of Maryland, Dental Department*—John C. Uhler.

*Columbian University, Dental Department*—H. C. Thompson.

*Royal College of Dental Surgeons of Ontario*—J. Branston Willmott.

*American College of Dental Surgery*—John S. Marshall.

*University of Denver, Dental Department*—Geo. J. Hartung.

The *ad interim* committee reported that it had investigated a charge preferred against the University of Maryland, Dental Department, by the College of Dentistry of the University of California, of graduating a person in less time than the rules demanded; that it found that no rule of the association had been violated, and had so reported to the parties in interest; that it had dismissed an effort for the reinstatement of the American College of Dental Surgery, Chicago, as not within the jurisdiction of the committee, with the advice to reorganize the college before attempting to influence the association to change its action, which reorganization has since been accomplished.

The committee also stated that its value in settling such matters had been made so clearly apparent that it recommended that it should be made a standing committee, to be elected by the association, instead of being appointed by the president.

The report was received and placed on file, and the recommendation with regard to the status of the committee was adopted.

The following resolutions, laid over from last year, were adopted:

*Resolved*, That in case of charges against any college no final action shall be taken until all parties concerned shall have at least thirty days' notice.

*Resolved*, That at all future meetings of the National Association of Dental Faculties the delegates shall consist of members of faculties, and demonstrators will not be received.

The following resolutions, also over from last year, were laid on the table:

*Resolved*, That after June, 1893, the yearly course of study shall be not less than seven months, two months of which may be attendance upon clinical instruction in the infirmary of the school, now known as intermediate or infirmary courses.

*Resolved*, That after the session of 1892-93, four years in the study of dentistry be required before graduation.

The following resolutions lie over under the rules:

Offered by Dr. Winder,—

*Resolved*, That hereafter graduates of pharmacy be placed on

the same footing as graduates of medicine, and be entitled to enter the second-year or junior class, subject to the examination requirements of each college.

Offered by the executive committee—

Any college failing to have a representative present for two successive sessions without satisfactory explanation shall be dropped from the roll of membership of this association.

The chair having been asked for a ruling upon the admission of graduates of pharmacy to the junior class, decided that under the rules they could only be admitted to the first-year or freshman class.

The executive committee offered a report recommending the restoration of the American College of Dental Surgery to full membership, which, after an explanation by Dr. Marshall of the reorganization of the college, was unanimously adopted.

The executive committee reported on the application of the Western Dental College, of Kansas City, recommending that it lie over for one year. The report was adopted.

The report of the executive committee recommending the rejection of the application of the Tennessee Medical College, Dental Department, of Knoxville, Tenn., for irregularities in conferring the degree of D.D.S. and in the reception of students, was adopted.

The application of Howard University, Dental Department, Washington, D. C., was laid over for one year.

The following applications for membership, also reported by the executive committee, lie over under the rules :

United States Dental College, Chicago.

Homœopathic Hospital College, Dental Department, Cleveland.

Detroit College of Medicine, Department of Dental Surgery.

The report of the executive committee recommending that the Baltimore College of Dental Surgery be censured by the association for conferring the degree of Doctor of Dental Surgery upon Charles F. Forsham, M.A., LL.D., of Bradford, England, *in absentia* and honorarily, in violation of the rules of the association, was adopted.

Dr. Truman offered an amendment to the rule regarding the conferring of the degree of Doctor of Dental Surgery honorarily, absolutely prohibiting the exercise of that privilege to the members of the association, but the amendment was lost, after discussion, it being the general sense that the present rule is a sufficient safeguard against the unworthy bestowal of the honor.

Dr. Cravens offered the following amendment to the constitution, which goes over under the rules:

Amend Article VII. so that it shall read as follows:

ART. VII. Any reputable dental college, located in any State of the United States, may be represented in this body upon submitting to the executive committee satisfactory credentials, signing the constitution, conforming to the rules and regulations of this body, and paying such assessments as may be made.

The association adopted a protest against the classification of dentists as manufacturers, as provided in House Bill No. 7696, known as the Willcox Bill, and against the collection of statistics from dentists under its provisions, on the grounds that dentists are not manufacturers in any sense, not being engaged in the manufacture, fabrication or sale of any product having a merchandisable value; that all the laws heretofore passed in the various States and Territories and the District of Columbia distinctly recognize dentists as professional men; and that the attempt to collect statistics would be an injustice not only to them but to their patients, and that such statistics if collected would be valueless to the Government because showing the products of a class of men not engaged in manufactures.

The following, offered by Dr. Winder, was also adopted:

*Resolved*, That the National Association of Dental Faculties recommends that their alumni write and demand of the Census Bureau of the United States the return of all statistical reports, as, under the recent agreement between the dental profession and said Bureau, lawyers, physicians and dentists are exempted from making statistical reports for the census of 1890; and that a copy of this resolution be forwarded to the chief of the Census Bureau.

A communication from the Post-Graduate Dental Association of the United States, suggesting the establishment by the colleges of short courses of training and teaching especially designed and arranged for practitioners, was received and referred to the executive committee.

The manuscript of a Compend of Materia Medica and Pharmacy for Dental Students, by Dr. E. L. Clifford, of Chicago, was referred to the committee on text-books, with power to act.

Dr. Marshall offered the following resolution, which was adopted :

*Resolved*, That the Secretary be instructed to notify the National Association of Dental Examiners that the National Association of Dental Faculties considers it out of its province to legislate upon the relative values of the L.D.S. and D.D.S. degrees.

The following were elected officers for the ensuing year : J. D. Patterson, Kansas City, President ; H. A. Smith, Cincinnati, Vice-President ; J. E. Cravens, Indianapolis, Secretary ; H. A. Smith, Cincinnati, Treasurer ; F. Abbott, New York, J. Taft, Cincinnati, and A. O. Hunt, Iowa City, Executive Committee ; James Truman, Philadelphia, Frank Abbott, New York, and Thomas Fillebrown, Boston, *ad interim* committee.

The President appointed as the Committee on Schools Drs. J. A. Follett, Boston ; S. H. Guilford, Philadelphia ; E. D. Swain, Chicago ; C. N. Peirce, Philadelphia ; T. W. Brophy, Chicago.

Adjourned to meet at the call of the executive committee.

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### National Association of Dental Examiners.

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The eleventh annual meeting of the National Association of Dental Examiners was held at Niagara Falls, commencing Monday, August 1, 1892.

The sessions were presided over by the Vice-President, Dr. Magill, the elected President, Dr. L. D. Shepard, of Boston, explaining his resignation from the State Board of Massachusetts, which necessarily carried with it his resignation of the presidency

of the association. The resignation was accepted with regret, and Dr. Shepard was unanimously accorded the privileges of the floor.

The following State Boards were represented at the sessions :

*Colorado*—George J. Hartung.

*Georgia*—D. D. Atkinson.

*Iowa*—J. T. Abbott, J. B. Monfort.

*Indiana*—S. T. Kirk.

*Maryland*—T. S. Waters.

*Minnesota*—L. W. Lyon.

*Massachusetts*—E. V. McLeod.

*New Jersey*—Fred. A. Levy.

*Ohio*—Grant Mollyneaux, Grant Mitchell.

*Pennsylvania*—W. E. Magill, Louis Jack, J. A. Libbey.

*Tennessee*—J. Y. Crawford.

*Wisconsin*—Edgar Palmer.

*Kansas*—A. H. Thompson.

The following boards were admitted to membership :

*Virginia*—J. Hall Moore.

*North Carolina*—V. E. Turner.

*Oklahoma*—D. A. Peoples.

*South Dakota*—C. W. Sturtevant.

*District of Columbia*—Williams Donnally.

At the instance of the Committee on Colleges, the following communication was sent to the National Association of Dental Faculties :

NIAGARA FALLS, August 1, 1892.

*To the National Association of Dental Faculties :*

GENTLEMEN—Whereas, a very considerable abuse has risen by the improper use by students of the various certificates of the schools, such as the “standing” and “passing” certificates, to support students and graduates under age in their attempt to illegally engage in practice; we, therefore, ask your association to request the various colleges to have their “standing” and “passing” certificates of such uniformity of terms in each case that they can be used for no other purpose, and that they be printed in few words and small type, and be signed only by the Dean.

Respectfully,

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

FRED. A. LEVY, *Secretary.*

A committee of conference was appointed, consisting of Drs. Truman, Marshall and Swain, on the part of the Faculties' Association, and Donnally, Palmer and Monfort on the part of the Examiners' Association, which, after consultation, agreed upon a favorable report.

Dr. Lyon offered the resignation of the Minnesota Board, which was laid upon the table, as it had evidently been offered as the result of a misunderstanding, and the board was requested to withdraw it.

The following resolution, offered by Dr. Crawford, was adopted :

*Resolved*, That when a member of any State Board becomes a teacher of a dental school, his resignation from his board should follow.

A resolution protesting against the classification of dentists as manufacturers and the collection of census statistics from them under the provisions of House Bill No. 7696, commonly known as the Willcox Bill, was adopted. The resolution was similar in terms to those adopted by other dental societies.

The Committee on Colleges reported that they had received reports showing that the actual number of students in attendance at the last sessions in the schools recognized by the Examiners' Association was 2881; of graduates, 1357. In the schools not recognized by the association the students were 236; graduates, 96.

The report also considered desirable advances to be made in educational methods, and offered the following memorial, which the Secretary was directed to transmit to the National Association of Dental Faculties :

The National Association of Dental Examiners would respectfully memorialize the National Association of Dental Faculties to authorize two advances in the system of dental education.

These are: First, that your association require the universal enforcement of a higher grade of preliminary education of candidates for matriculation. This proposition lies at the foundation of dental education, in which is involved the quality of the

graduates of the future, upon which depend the advancement, the standing, and the dignity of the dental profession.

The second proposition is that complete preparation be made in each school for laboratory technique in the studies of histology, pathology, and in each of the departments of dental surgery and dental prosthesis, and that this method of teaching be made a requirement of the schools.

The committee also reported the following amended list of colleges which they recommend as reputable:

Baltimore College of Dental Surgery, Baltimore, Md.

Boston Dental College, Boston, Mass.

Chicago College of Dental Surgery, Chicago, Ill.

College of Dentistry, Department of Medicine, University of Minnesota, Minneapolis, Minn.

Dental Department, Columbian University, Washington, D.C.

Dental Department, National University, Washington, D.C.

Northwestern University Dental School, (formerly Dental Department of Northwestern University, University Dental College.

Dental Department, Southern Medical College, Atlanta, Ga.

Dental Department of University of Tennessee, Nashville, Tenn.

Harvard University, Dental Department, Cambridge, Mass.

Indiana Dental College, Indianapolis, Ind.

Kansas City Dental College, Kansas City, Mo.

Louisville College of Dentistry, Louisville, Ky.

Missouri Dental College, St. Louis, Mo.

New York College of Dentistry, New York City.

Northwestern College of Dental Surgery, Chicago, Ill.

Ohio College of Dental Surgery, Cincinnati, O.

Pennsylvania College of Dental Surgery, Philadelphia, Pa.

Philadelphia Dental College, Philadelphia, Pa.

School of Dentistry of Meharry Medical Department of Central Tennessee College, Nashville, Tenn.

University of California, Dental Department, San Francisco, Cal.

University of Iowa, Dental Department, Iowa City, Ia.

University of Maryland, Dental Department, Baltimore, Md.

University of Michigan, Dental Department, Ann Arbor, Mich.

University of Pennsylvania, Dental Department, Philadelphia, Pa.

Vanderbilt University, Dental Department, Nashville, Tenn.

Western Dental College, Kansas City, Mo.

Minnesota Hospital College, Dental Department, Minneapolis, Minn. (defunct).

St. Paul Medical College, Dental Department, St. Paul, Minn. (defunct).

American College of Dental Surgery, Chicago, Ill.

The report was adopted.

The following officers were elected for the ensuing year: W. E. Magill, Erie, Pa., President. J. Y. Crawford, Nashville, Tenn., Vice-President; Fred. A. Levy, Orange, N. J., Secretary and Treasurer. Adjourned.

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### Creasote and Its Elements.

Dr. E. Main (*Bulletin Generale de Therapeutique*, 1892, liv. 10e, p. 205) has made a laboratory study of this remedy, which has of late attracted so much attention. He established the fact that the elements of creasote were poisonous in the following order: (1) para-cresylol (least); (2) phlorol; (3) guaiacol; (4) creasote; (5) creasol (most). Locally, creasol was the most irritant, guaiacol the least. For all these elements this laboratory work shows three important characteristics; (1) that they are feebly poisonous; (2) a tolerance can be established; (3) they are eliminated by the lungs. As remedies against tuberculosis they can be arranged in the following order: (1 and 2) phlorol and creasol; (3) para-cresylol; (4) guaiacol; (5) creasote (most powerful).

It is believed that although all the elements of creasote have some value, and indeed guaiacol should be especially mentioned, yet creasote is the most active. Beechwood cresaote should be preferred for its antiseptic power, for its feeble toxicity, and because of the results furnished by experimental therapeutics as well as by clinical observation.—*Med. and Surg. Reporter*.

## SELECTIONS.

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### The Indigestibility of Certain Articles.

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That there are certain articles of food which are indigestible mainly on account of chemical incompatibility with the fluids of digestion, must be accepted as true. However, a very much larger number of articles are indigestible mainly because they are tough, rather than either soft or friable, and hence are not well adapted to the requirement of being masticated to a pulp before being swallowed. Let us consider a few examples, which may be taken as sufficient to illustrate the entire class.

An egg is indigestible if boiled until the albumen is solidly coagulated. It is quite easy of digestion if eaten raw, soft boiled, or boiled several hours until it becomes mealy. The ordinary hard-boiled egg is usually swallowed in lumps which expose but little of their surface to the action of the gastric juice. Hence, its digestion is very slow, indeed.

Mashed potatoes, or old potatoes which boil mealy are easy of digestion, while new potatoes, which are almost invariably swallowed in chunks have a bad reputation. So, also, fried potatoes, in which the potato is well protected by a coating of grease, bid defiance to the digestive fluids; while mashed potatoes and gravy or butter gives no especial trouble.

Other articles that may be mentioned are green cucumbers, green corn, watermelon preserves, cheese, "sad" bread, cake or dumplings, pie-crust (especially the well-soaked under-crust), and many others. Gladstone is reported to have said that he gives each mouthful of food thirty-two bites in masticating. Our own rule is to continue chewing a mouthful of food as long as it gives pleasure to the taste. At any rate, it may be laid down as a rule, that very seldom will food prove indigestible, if the one who eats it is thoroughly conscientious in reducing every bit of it to a fine pulp before swallowing it. Our reply to patients when asked what food is allowed, is generally, "Any-

thing in reasonable quantity, that you will chew thoroughly," having due regard, of course, to special diseased conditions and circumstances.

Following the principles outlined above, persons of no more than the average digestive power may safely indulge in a meal composed of the indigestible articles mentioned herein.—*The Times and Register*.

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A VEXED QUESTION has always been the influence upon a nursing child of food and medicines administered to the mother (*Northwestern Lancet*). One of the latest series of observations is recorded in a French obstetrical journal. This experimenter found that when a child nursed soon after its mother had taken from thirty to forty-five grains of salicylate of soda, the urine of the infant gave the reaction of the salicylate. After twenty-four hours all traces of the drug disappeared from the urine. Experiments with iodide of potash gave like results, and iodine was found in the urine of the child in cases where iodoform had been applied in considerable quantity to vulvar and vaginal wounds of the mother. The transmission of mercury to the infant was found to be slight and irregular, and no effect could be detected upon the infant where the mother had eaten things generally supposed to injure the child, such as lemons, vinegar, etc. Nor was it found that fever on the part of the mother rendered the milk hurtful to the child except when the fever was high and long continued. The most important drugs experimented with were the narcotics, since it has often been claimed that the ingestion of preparations of opium by the nursing mother may profoundly affect the child. Experiments made by the administration of full doses of laudanum to the mother were in some cases followed by prolonged sleep on the part of the child, while in other cases neither prolonged sleep nor constipation occurred. After doses of morphia as large as an eighth of a grain nothing in particular was noticed in the child, and the same was true after full doses of chloral, but the subcutaneous injection of atropia into the mother caused marked dilatation of the pupils of the infant.

### Treatment of Neuralgia by Hypodermic Injections of Cocaine.

Malherbe, of Nantes, states (*Ther. Gazette*) that he has obtained very good results from the employment of cocaine hypodermically, for neuralgia, in one of the following formulæ:

|     |    |                           |           |              |
|-----|----|---------------------------|-----------|--------------|
|     | R  | Hydrochlorate of cocaine, | -         | gr. xv.      |
|     |    | Water,                    | - - - - - | oz. vi.      |
|     | M. |                           |           |              |
| Or, | R  | Hydrochlorate of cocaine, | -         | gr. xv.      |
|     |    | Boric acid,               | - - - - - | gr. viij.    |
|     |    | Distilled water,          | - - - - - | oz. vj.      |
|     | M. |                           |           |              |
| Or, | R  | Neutral glycerin,         | - - - - - | oz. j to ij. |
|     |    | Hydrochlorate of cocaine, | -         | gr. xv.      |
|     | M. |                           |           |              |

In making these solutions it is necessary that the cocaine should be absolutely pure. If it is used externally over the nerve it may be dissolved in liquid vaseline in the proportion of two per cent. The method which Malherbe employs is to raise a small portion of the skin immediately over the seat of pain, and to inject underneath it a drop of the anæsthetic. The tender nerve is found by the pain which is elicited by gently moving the needle about in the tissues which have been made anæsthetic by the first drop which has been inserted by the needle, when several more drops are traced directly in contact with the nerve fibre. Notwithstanding the rapid absorption of cocaine in the blood-vessels, this writer has not seen the untoward effects which others have observed in the hypodermic injection of these drugs, particularly when used about the head. It was found also that larger doses could be used after the drug had been given for a number of days, the patient becoming immune to the smaller doses.

### Hereditary Transmission of Mutilations.

Dr. C. G. Lockwood, of New York, has recently published some interesting results of his experiments on the hereditary transmission of mutilations. White mice were selected on ac-

count of their rapid breeding, as they begin to breed every thirty days. He bred them in-and-in for ninety-six generations, destroying all the sickly and defective ones, and in this way obtained a larger and finer animal than the original pair. His experiments in breeding their tails off were done by selecting a pair and putting them in a cage by themselves and clipping the tails of all the young. When these were old enough to breed he selected a pair, and when they had young, clipped their tails. By continuing this breeding, in the seventh generation he got some young without tails, and finally got a perfect breed of tailless mice. By taking one with a tail and one without a tail, and alternating the sexes in each generation, he finally again got a breed of all-tail mice.—*N. Y. Med. Record.*

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### **Treatment of Disorders of the Teeth during Pregnancy.**

In the *Birmingham Medical Review*, July, 1892, Elliott describes several diseased conditions of the teeth and gums occurring during pregnancy. In anæmic patients the gums become thin, pale, and shrivelled in appearance and retracted from the edge of the teeth; a prominent ridge is often seen near the free border. In other cases the gums are full and reddened, apparently deeply congested and containing pus, which exudes on pressure.

An important factor in producing caries of the teeth is the altered condition of the secretions; their reaction becomes acid instead of alkaline, which favors markedly the disintegration of the teeth. Caries of the teeth is often accompanied by a brownish discoloration on the labial surface of the tooth following the outline of the gum; the enamel is brittle and opaque. The upper bicuspids and molars are often carious, the dentine being softened but not discolored. The lesion in these cases is caused by the fact that the tongue lies frequently in contact with these teeth, and the acid mucus and matter vomited come frequently in contact. In anæmic patients "white" or soft caries accompanied by absorption of the alveolar process is observed; the teeth become so loosened as to frequently come out.

Neuralgic pain in or about the teeth is sometimes so severe as to delay labor. Hysterical pain in the teeth sometimes extends to

several, it may be fixed in two sound teeth, or may shift from side to side.

As regards treatment, quinine and opium may be used when the gums are anæmic; ammonium chloride and aconite when full and congested. Chlorate of potassium and potassium bromide are efficacious in irritable gums and teeth. Equal parts of charcoal and prepared chalk are useful as a local application to irritable teeth and gums. In reflex pain in the teeth and gums a blister three by one inch in size applied over the fourth and fifth dorsal vertebrae, often affords relief. When pain in the teeth is constant and depressing, removal under an anæsthetic is indicated.—*Amer. Journ. of Med. Sciences.*

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## EDITORIAL.

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### Educational.

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The time has arrived when our dental colleges open their doors for the reception of students—the time when another course of educational work begins; an interesting and important time for the student and the teacher as well; a time of interest to all members of the dental profession who are solicitous for its welfare.

The present is a time of especial interest in college matters; practically most of our colleges enter the year under new auspices, viz.: the adoption of three full courses of not less than five months each for graduation. This, however, came into force last year, but more fully now, because the last of the two years' students will disappear with this term, and a far less number of these will be present than last year; and doubtless most of the colleges will make higher requirements in regard to preliminary education. The last term before the three year requirements and while a very mild preliminary examination was required by most colleges there was a large influx of students, many of whom were influenced by the lower requirements. The free discussion on the subject of dental education had in the American

Dental Association, in the Southern Dental Association, in the Association of Dental Faculties, and the Board of Dental Examiners is a stimulus to the colleges to raise their requirements and to exercise more care in the reception of students as well as in their education and graduation.

The probability is that for the present year nearly if not quite all the dental colleges will have smaller classes than for the last year or two, and indeed there will not probably in the near future be so great a rush of students into our colleges as in the last two years. One result of this great increase of students has been the organization of new colleges, some ten or twelve of which have been inaugurated during the last two years; this was unprecedented and quite beyond the normal growth; whether these will all continue their existence is a question about which, of course, there is much difference of opinion.

The elevation of requirements in dental education has elicited the attention of the better educated and more cultured class of students. This progress should not, and will not stop at this stage. The beneficial results of the progress already made will be so apparent to the profession as to meet its entire approval and its demand that this progress shall continue. How very desirable it is, that all our colleges should fully respond to the trend of the times, in this respect, we need here hardly attempt to specify. Large classes and corresponding emoluments seem to have been the chief aim of some. Faculties, however, are not wholly responsible for the entrance of unworthy students; great care and vigilance in many instances are insufficient to prevent this; faculties of dental colleges may be and are imposed upon, as well as any other class of people, but such an occurrence should be reduced to the smallest possible degree. It would be well to fully accept only those who can establish their claims for acceptance to an undoubted degree, and let those who cannot do this be held in abeyance or conditioned until time shall reveal their true character. Medical and dental faculties should exercise the greatest care and discrimination in regard to the admission of those whom they admit to their classes.

We trust and believe that the present year will show a far better and more earnest class of students in our colleges than

heretofore. The increase of time for graduation will be attractive only to the student of the greater earnestness, determination, and industry; the hasty slipshod student is far less likely to enter upon this than upon the former short term, and besides, the greater discrimination in admission will serve in a large measure to discourage the poor student.

The profession will look with great interest to the outcome of the present year's work in our colleges, and doubtless will expect a marked improvement in many particulars.

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### **Ohio State Dental Society—Annual Meeting.**

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The next annual meeting of the Ohio State Dental Society will be held in Columbus, on the first Tuesday in December, 1892.

Efforts are being made to have a large gathering of the profession of the State. The Executive Committee as well as the officers are actively at work to secure a good meeting. A number of subjects will come up for consideration that are of interest to the entire profession, and every man in the State who has any interest in the profession and a desire for its progress should be present, each prepared to do his share of the work that shall be before it.

The subject of Education will have an importance for this meeting that has never occurred before, and this especially in view of the fact that four new dental colleges have been organized in the State within the last year and a half.

The amended law has been in operation for the last few months, and will come up for its share of consideration.

The World's Columbian Dental Congress, of course, will come up for consideration, and probably some important questions to be decided in reference to it. There will manifestly be work enough to occupy a session of four full days, and we suggest that all the members and all the visitors arrange their business so as to remain and work from the beginning to the end of the meeting.

# THE DENTAL REGISTER.

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## PROCEEDINGS.

### American Dental Association.

The thirty-second annual meeting of the American Dental Association was held at Niagara Falls, N. Y., Tuesday morning, August 2d, 1892.

The Association was called to order by the President, Dr. W. W. Walker, of New York, at 11:15 A. M.

After the usual routine business was disposed of the President read the annual address, of which the following is a synopsis:

After congratulating the profession on the advance made by it during the year past, the address drew attention to the coming meeting of the World's Columbian Dental Congress, and predicted a great advance to be made during the coming year in expectation of this event. The address urged that every member of the profession do all in his power to further the interests of this meeting in a professional as well as a scientific way, and as the estimated expense of the Congress would probably reach \$30,000, he urged a generous co-operation in a financial way.

In regard to dental education and legislation, the address recommends the granting of diplomas from colleges only where the final examinations have been held by the regular State Examining Boards, and that then the diplomas of the various colleges could be recognized and accepted in the various States without question.

It was also desirable to adopt some plan for bringing the local and national societies into closer relationship, and the suggestion is made that a synopsis of all papers read at local societies should be referred to the proper section of the American Dental Association, which should be the custodian, and from

these a report by the Secretary of each section could be made each year that would represent the progress of the profession. The suggestion is also made that the Association could prepare a list of subjects which could be sent out and be discussed in various societies, and these discussions, when collated and sifted would result in large additions to our knowledge.

The report suggests that only a business meeting be held next year, as the World's Columbian Dental Congress will probably absorb all the time of the members.

Before closing the address the President called attention to the death of Dr. John Allen, one of the oldest and wisest known members of the profession.

The consideration of the address was referred to a committee consisting of Drs. E. C. Kirk, L. D. Shepard, and J. N. Crouse to report at a subsequent session.

Adjourned.

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## TUESDAY EVENING SESSION.

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### REPORT OF SECTION VII.

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ANATOMY, PATHOLOGY AND SURGERY, BY TRUMAN W. BROPHY,  
M. D., D. D. S.

This report consisted of an enumeration of a large number of contributions to medical and dental literature on the subjects of this section, which have appeared or been published during the past year.

The chairman also reported the following papers to be read at this meeting:

"Report of a Case in Practice of Pyorrhœa Alveolaris," by J. E. Cravens, D.D.S. "A New Operation for the Ex-Sec-tion of the Inferior Dental Nerve," by M. H. Cryer, M.D. "The Grinding Teeth of the Herbivorous Mammalia," by A. H. Thompson. "A Study of the Molar Teeth of the Proboscidi-ans," by W. C. Barrett, M.D., D.D.S.

## PYORRHOEA ALVEOLARIS—A CASE IN PRACTICE.

Reported by J. E. Cravens, D.D.S., Indianapolis.

Patient, male, aged 50 years, apparently in good health, except catarrhal affection of nose and throat.

DIAGNOSIS—Gums red and angry-looking, bleeding easily and freely, considerable pus about incisors, and gum festoons swollen and of a violet color. Patient complained of heat and pricking pains in the teeth specified above; well defined pockets on the approximal surfaces, some of which were notably profound.

The treatment consisted in the thorough removal of the incrustations, and trimming the affected alveolar margins. The pockets were then thoroughly washed with hot water, and an application of a ten per cent. solution of commercial sulphuric acid made. The patient was directed to use powdered sulphur as a dentifrice morning and evening and avoid the use of soap and alkaline mouth-washes. This treatment was continued for three days, at which time there was no material change in the condition except a little less congestion.

The treatment was then changed. The pockets were washed clean with hot water as before and a ten per cent. solution of nitrate of silver was substituted for the sulphuric acid. After twenty-four hours there was a marked change for the better in the appearance of the gums and an appreciable diminution in the quantity of pus discharged.

This treatment was continued for four days and resulted in complete suppression of the discharge of pus, the congestion had all disappeared, and the pockets had evidently filled up by adhesion.

The essayist thinks the cure a good and permanent one. There was no painful or deleterious effect caused by the use of the nitrate of silver solution at any time. He attributes the cure to the use of the hot water and the astringent and antiseptic effect of the silver nitrate. The preliminary surgical treatment and also the detergent effect of the sulphuric acid were valuable factors in the rapid and satisfactory termination of the treatment.

## DISCUSSION.

Dr. W. C. Barrett said there seemed to be no disease that came within the province of the dentist that calls for so much thought, study and careful investigation as pyorrhea alveolaris. He said that we have had but few cases of failure recorded in societies and elsewhere, yet our own cases were almost invariably failures. As to whether the cause of the disease was local or constitutional was not yet determined, but he had not been satisfied with any treatment he had yet tried, and he had tried about everything that had been recommended.

By local treatment he had been able to retard or arrest the progress of the disease, but had not been able to effect a radical cure. He could recall cases that had been under his care for years and years. Some of these cases would appear to be coming under control; the pockets would become almost filled with granulations and a cure seemed certain, when much to his dismay he would find the whole thing breaking down again and a speedy return of the disease.

The remedy Dr. Cravens had employed was a cauterant, and there was no therapeutic effect further than the cauterizing. From the case healing so rapidly it appeared to him that it was a case with local manifestations, and it was a question in his mind whether there would not be a return of the disease in three or six months. It will be interesting to watch the case and determine whether the result will be permanent or only temporary.

Dr. M. L. Rhein said it seemed to him that the case cited was not one of true pyorrhea alveolaris, but perhaps had its origin more from lack of due attention to the mouth. The essayist says that he thought the patient was in fairly good health. It is important to know the exact state of a patient's health, and the only way to determine this fully is by an examination both physical and chemical. The examination of the urine was important. In regard to the etiology of the disease he thinks that it is either a sequence of some constitutional disturbance or that disturbance is present at the time. If it be from disturbance of a disease that is hard to cure, as phthisis, etc.; the pyorrhea is hard, if

not impossible, to cure; on the other hand, if it be from disturbance of a disease that can be eradicated, then a cure of the pyorrhea may be effected.

Many cases had passed through his hands that had not been cured, and from the condition of the system he knew that it was a hopeless task to undertake it. A thorough examination of the patient is therefore essential, and if disease be found it will assist us in our prognosis of the case and usually determine for us whether the case can be cured or not by the character of the disturbing disease whether it be one curable or incurable.

Dr. W. H. Morgan thought that the disease was largely inherited. He had had patients where the disease seemed to run through the entire family from the father and mother down to the children of ten and twelve years of age. He did not know that he had ever permanently cured a case, but he believed that the treatment should be mostly constitutional, with perhaps radical local treatment. He further stated that the gentlemen seemed to think that it was an incurable disease. He said it was an error, for every case could be cured and permanently too; extract the teeth and nature will do the rest. [Laughter].

A. W. Harlan said there is no objection to the use of sulphuric acid in the strength indicated by the essayist as a preliminary treatment. It is not strong enough to do harm. In the commercial acid there is 13 per cent. of sulphuric acid and 87 per cent. of water. To obtain the strength indicated this is still further reduced ten times, so that it is too weak to do any harm to the teeth or soft tissues. Diluted sulphuric acid acts much better than the aromatic sulphuric acid, for the aromatic sulphuric acid does not dissolve the calcarious or serumal deposits from the teeth, while the diluted sulphuric acid will. Dr. Harlan dilutes the acid with cinnamon water instead of water.

He said that nitrate of silver was used in various conditions, for antral disease, etc., but not in so strong a solution as 10 per cent., for it is a powerful astringent and stimulant.

Hot water is good as a therapeutic agent, and something the majority of dentists fail to utilize.

He said it seemed hardly possible that a cure of pyorrhea could be effected in ten days. If the pockets were half the length of the root, as indicated by the reader, you could hardly get a formation of new tissue in that time. In his opinion pyorrhea alveolaris is a purely local disease, with many constitutional manifestations which are concomitant with and not the cause of the disease.

Dr. M. H. Cryer, of Philadelphia, then read a paper entitled "A New Operation for the Ex-Section of the Inferior Dental Nerve." In the discussion of which Drs. Morrison, Fillebrown, Brophy and others said they preferred operating from the inside of the mouth.

The next paper read was entitled the "Grinding Teeth of the Herbivorous Mammalia," by A. H. Thompson, D.D.S.

The paper drew notice to the apparently promiscuous arrangement of enamel, dentine and cementum in the hoofed quadrupeds and vegetable feeders, and to the fact that the arrangement exhibits the highest degree of specialization found in dentition. This arrangement, seemingly without regularity, is uniform in species, but differs with families, hence the value of a knowledge of difference in forms for identification of species. The Ruminants furnish the best examples of this high degree of specialization. There are marked differences in the fissures and deep markings of the different genera of Ruminants, the goat, sheep, antelope, ox, deer, elk, giraffe and camel. The hog, hippopotamus, horse and rhinoceros also very markedly in size and form of the crowns. The proboscideans have a peculiar transverse marking, as the mastodon and elephant. The rodentia also exhibit a special transverse marking of alternate enamel and dentine. The molar teeth of the higher mammalia have by a process of evolution from simple types become organs of beauty and mechanical efficiency. The mechanical effects of use have been the principal factors in the development of tooth forms. The variation in food and consequent variation in movements of the jaw to produce effective mastication has brought that change in the form of the glenoid cavity and condyle of the jaw. The simple up and down motion of the jaw has been changed to the

lateral and forward and back, and a combination of all as in man. This necessitates a special arrangement of dental tissues. The character of the food supply is the great influence which has produced this wonderful modification and specialization in the grinding or molar teeth.

This was followed by "A Brief Study of the Teeth of the Proboscidiens," by W. C. Barrett, M.D., D.D.S.

The paper referred to the manifest entire loss of any preserved specimens of extinct species through the lack of chances of preservation by sudden upheavals or other incidents in the formation of the earth in the earlier periods which would encapsule and so preserve them for our edification. But in the pachyderms, as they now exist, or have existed in comparatively modern times, modifications can be traced which are a sure indication of the gradual development of certain species through the lapse of cycles of time. Families, whose dental development seems to be widely separated, on close inspection are found to be close congeners. For instance, there is a distinct relation between the dentition of the tapir, with its forty-two teeth, and the elephant, with only six. The paper described the manner of the formation of the molar teeth of the elephant, the deposition of the various tissues, and models were shown to illustrate this development, the distribution of tissues being such as to, by wear, prepare the best possible masticating surface. The manner in which these teeth are worn out, cast off, and replaced by their successors throughout the entire life of the animal, was described and illustrated. These teeth are erupted in such a way as to best economize the tooth material and furnish the animal with a satisfactory dental organ for a long period. The time of eruption, the number of plates forming the crown, and the duration of each successive tooth, was shown to be regular and systematic, the first molar having a fewer number of plates and the least number of years, there being a gradual increase in each succeeding tooth of both plates and years of life. There are abnormalities in the development of the incisors or tusks, due, probably, to accident to the alveolar process. The celebrated elephant "Jumbo" had two molars in each jaw fully erupted,

and none of the visible teeth occupied their normal positions. The probable reason why the two molars were present at the same time was due to the fact that the animal had always been in captivity and been fed on food free from gritty or wearing material, and the first tooth was not used up in time to be cast off before the full time for the emergency of its successor. This is the opinion of Prof. Flower of the British Museum. But Dr. Barrett thinks it due to some accident to the formative germs of the teeth.

Adjourned.

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### WEDNESDAY MORNING SESSION.

Dr. Barrett, of Buffalo, N. Y. read a paper on "Comparative Dental Anatomy:" and Dr. W. B. Ames, of Chicago, read the report of Section 1. on Prosthetic Dentistry, Chemistry and Metallurgy, both of which were fully discussed.

Dr. George Evans, of New York, then presented a new method of making Crowns, the discussion of which was as follows:

Dr. J. D. Patterson asked how the doctor controlled the case so as not to melt the crown and yet get the proper amount of heat to fuse the enamel.

Dr. Evans said the gold was alloyed with platinum. While baking, the open end of the muffle is turned toward the operator so that he can watch the case as closely as necessary. He advised those first attempting the work to experiment to determine how high to carry the heat without injuring the case.

The enamel could be fused by a blow-pipe flame, but it is better to use the muffle to protect the case from carbon.

Question—What proportion of platina do you use?

Answer—From 3 per cent. to 4 per cent. for crowns.

Dr. McKellops said he saw the same operation some years ago at Berlin, Germany. It was brought out by Dr. Cunningham. He presented specimens of various colors, such as gum color, etc., but said the formula for the enamel was secret and he would not disclose it.

Dr. Evans said that he used enamel made by Timme & Co., of New York. He further stated that he claimed no originality

for this work ; that he obtained his ideas of a muffle and of glass enamels from Dr. Herbst.

Dr. Guilford said that when a brother of Dr. Herbst was in America, attending lectures at a Philadelphia college, he demonstrated the using of pulverized glass on the teeth to imitate the gum in color, etc. To make a muffle that has been very satisfactory in his hands Dr. Guilford takes a suitable piece of platinum of 32 to 34 gauge, bends to shape over the fingers, and flows pure gold over the joints to unite the parts. He further stated that if you have a plate tooth and want to make the pins headed for rubber or other use, file off the pins, place a particle of borax on the end of each pin, lay across both pins a piece of gold plate, lay the tooth on asbestos paper, place in the crucible, apply heat until the pieces unite. There is no danger of checking the tooth as the air in the muffle heats quicker than the tooth.

In regard to glass fillings, he said that we get on very dangerous ground when we attempt them, for the glass lacks that quality of strength necessary for the restoration of tooth-corners and in other locations where there is leverage on the filling. Besides such fillings bulge, and it is almost impossible to secure the proper shades.

Dr. McKellops: The originality of enameling belongs to the watch-makers.

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## REPORT OF SECTION II.

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DENTAL EDUCATION, LITERATURE AND NOMENCLATURE, BY  
LOUIS OTTOFY, D.D.S.

*Education.*—There are 38 dental colleges now in existence, 5 of which were organized during the past year. 1483 students were graduated in 1892, the Philadelphia School leading with 148, the Meharry and German American having one each ; 851 were graduated from 10 colleges. The lengthening of the college course does not seem to have materially decreased the number of students entering dental colleges.

There are 130 local societies now in the United States, with a membership of 5,000 ; 24 of these societies were represented by delegates in this association last year.

The reading scheme in the post graduate course is now under way and much interest seems to be awakened in a two year's reading course in dental anatomy and crown and bridge-work. Other courses on dental science and art are to be provided in the near future.

*Literature.*—The dental periodicals show a marked improvement in the quality of the matter they contain. The Illinois Dental Society advises the establishment of a weekly dental journal, as the monthlies are too slow in getting the *news* to their readers; it was also here advocated that a quarterly journal, publishing only original matter for which \$5.00 per page had been paid, would meet with financial and professional support.

Permanent dental literature has been enriched by a revised edition of Harris' Dental Dictionary; a new edition of Sewill's Dental Surgery; the fourth edition of Gorgas' Dental Medicine; Charts of Typical Forms of Irregularities, by Eugene S. Talbot; a second edition of Black's Dental Anatomy; Catching's Compend for 1891, and last, a new work on Dental Jurisprudence, by Wm. F. Reh fuss, D.D.S., of Philadelphia.

In dental nomenclature there is no report to make.

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### WEDNESDAY EVENING SESSION.

The report of the Committee on the President's Address was read by Dr. L. D. Shepard, of Boston, and was as follows:

Recognizing the importance of the World's Columbian Congress at Chicago in 1893, we recommend that an appropriation of \$500 be made from the funds of this Association to the treasury of the World's Dental Congress. The Southern Dental Association has already made a similar appropriation.

In regard to dental education and legislation your committee respectfully report that they are of the opinion that the State Examining Boards should be appointed by the Governor of each State upon the recommendation of the members of the various State and local societies; and we believe that all such matters should be managed in each State by the State Dental Society, which should practically embrace the whole reputable profession

of the State. This we also regard as the principal factor in securing the best laws and their proper enforcement, the most competent Board, the much desired inter-State, county and general recognition of State licenses.

In regard to the formation of a committee on State and local organizations, we would offer the following resolutions:

That a Standing Committee, composed of three members, shall be appointed originally for the terms of one, two and three years respectively, and that all vacancies due to expiration of the term thereafter shall be filled for the term of three years. All vacancies occurring from any other cause shall be filled for the unexpired term.

The basis of the plan and scope of work of said committee, and its duties in relation thereto, shall be suggestions as set forth in the address of the President; also the articles from which he quotes and in harmony with the circular letters issued by the Chairman of the Executive Committee.

In regard to the meeting of the Association for next year, we offer the following resolution:

*Resolved*, That the annual meeting of this Association for 1893 be convened at the time and for the purpose suggested in the President's Address, and that the consideration of the report of the Special Committee embodying certain proposed amendments to the Constitution and By-Laws, be laid over for consideration at that meeting.

We also recommend that the matter of the death of Dr. John Allen be referred to the Committee on Necrology for appropriate action.

Respectfully submitted,

EDWARD C. KIRK,  
L. D. SHEPARD,  
J. N. CROUSE.

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### REPORT OF SECTION III.

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#### OPERATIVE DENTISTRY, BY A. W. M'CANDLESS.

During the year there have been published 60 articles, in different dental journals, on operative dentistry, mostly on filling materials and treatment of pulpless teeth. Only one article on

conservative treatment of the pulp, indicating that this subject is not a popular one, or that the practice is not sufficiently successful to inspire any one to write about it. This is at variance with the report from this section last year. The effort to get reports of local society transactions for this meeting failed to bring satisfactory responses, but it is hoped by more persistent pushing of this matter next year will meet with more definite and favorable replies.

Some progress seems to have been made in the application of agents for painless operations on the pulp.

The report mentions as new appliances and helps in operative work Dr. W. B. Ames new oxyphosphate of copper, crystal mat gold, Dr. Keefe's improved rubber dam clamp, improved flexo files, apparatus for softening gutta-percha, dento electric cautery, improved root dryer, cotton pellet roller, root trimmers, Bosworth mallet, silver and platinum alloy, screw posts and hand matrix for manipulating plastic fillings.

#### REPLANTING AND TRANSPLANTING TEETH, BY W. N.

MORRISON, D.D.S.

The essayist stated that of the cases reported to this association in 1875-6 two of the replanted ones are still in the mouth, in good condition; one of them being in the mouth of a person with most unfavorable constitution.

The essayist complained of the unfavorable comment of the profession in regard to this operation as calculated to hinder progress and to throw difficulties in the way of those who were practicing this operation with sufficient success to justify it. The essayist enumerated a number of successful operations, and although he experiences failures, he believes the operation of sufficient durability to warrant its use in many instances where extraction and artificial substitution would be unsightly or undesirable.

One of the important elements of success in this operation is the attainment of absolute rest, or freedom from motion of the implanted tooth. This is accomplished best by a figure of eight suspensory copper wire ligature from the crowns of adjoining

teeth over or under, (as the case may be), the cutting edge of the implanted tooth, also securing the ligature in position, and the interdental spaces with phosphate cement, and this is worn for six or eight weeks.

#### DISCUSSION.

Dr. Head asked how many replanted teeth lasted five years ?

Dr. Morrison: Not to exceed twenty per cent.

Dr. Darby: An inquiry of this kind may be misleading to the younger members of our profession by leading them to think that implanted teeth will last but a short time. I have seen many of these teeth that have done good service for six or seven years and are still in good condition. When Dr. Younger was east, some years ago, he implanted in one case four bicuspsids and two central incisors. For about six years they did good service but finally one of the centrals was lost. Having the patient in charge I inserted a temporary plate, which was worn a few months, then I drilled a new socket and implanted another tooth. The tooth became firm after a few months time and is firm to-day.

Altogether I have myself implanted thirty-six teeth out of which I have had but five failures. Some of the teeth have now been in position four or five years.

There are places where this operation is a valuable one; for instance, to supply the space of a lost lateral or central incisor. If the tooth implanted lasts only four or five years it is worth the operation and another can be implanted. I have engrafted artificial crowns on roots of teeth and implanted when I could not find a natural tooth of the right shade. I hope the profession will not give up this valuable operation, for there is certainly merit in it and I, for one, should dislike to see it get a "black eye."

Dr. W. H. Morgan: Bony ankylosis was spoken of as one of the forms of attachment of implanted teeth; there is no such thing as a bony ankylosis; it is the uniting of cartilage and I think the term is improperly applied. The tooth is held by encystment, cartilagenous or otherwise, but never by a bony union; the dead and living will not unite.

Dr. L. Ottofy said it was unfortunate that Dr. Younger, when east, had to implant teeth in all sorts of mouths, favorable and unfavorable alike. One great objection to the implantation of teeth is the scarcity of perfect teeth. I have lost several cases on account of checks, etc., in the implanted tooth. I almost invariably cut off the crown of the tooth, adjust a Logan crown on the root using a layer of gold between root and crown for protection.

Some of the teeth I have implanted have been in the mouth for five years. Most of the first cases I tried were failures on account of not taking proper care in the selection of patients. On the other hand there is hardly a case where the patient was selected but is in good condition to-day. How long implanted teeth will last we cannot say further than judging from the past. Some of those implanted by Dr. Younger several years ago are still firm. From what we know now I would say they would last from four to seven years.

MATRICES, BY J. E. CRAVENS, D.D.S., INDIANAPOLIS, IND.

Dr. Cravens said: It is a test of an operator's judgment sometimes to determine whether he shall use a matrix or merely a support for his filling material. There is a wide difference. \* \* \* A matrix for filling should possess certain advantages, such as thinness for economy of space, close conformity to cavity margins, however irregular; sufficient malleability to enable the operator to bend and dilate at any part and to any extent desirable; it should be cheap enough to be thrown away after once used. \* \* \* A writer in a dental journal declares that perfect gold filling cannot be done in matrices. I think him mistaken, for every cavity is a matrix so far as it effects the form of its contents, but from cases observed I am satisfied that failures may easily be made and that an operator's confidence in matrices sometimes is abused, because failures at obscure margins may not be discoverable until after the completion of the work. The usual fault with matrix filling consists in imperfect adaptation of the filling material at cervical and lateral margins. Gold cannot always be depended upon for perfect adaptation at

these points unless in excess, and close matrices do not admit of excess.

Dr. Cravens thinks a support, a piece of thin metal of a springy, non-malleable quality placed between the teeth, with no attempt at conformity to cavity margins, is preferable. The margins should stand free, particularly in filling with gold, so that an excess may occur and better adaptation be derived. He recommended the construction of matrices of German silver, cut and fitted to the curves of the gum in the same manner as fitting bands for gold crowns. A band closed with a lap joint next to the cheek and fastened with soft solder may be dilated or bulged at any part, the metal yielding readily to a moderately firm pressure, so as to conform to an approximating tooth or give fullness at any point. Amalgam thus supported may be left several hours to harden and often accommodate the dentist's demands. For gold plain shields will hold all the space required, and if a little more space should be required for finishing purposes it may be readily gained during the operation by driving the gold against the shield, thus actually wedging the teeth slightly apart.

#### DISCUSSION.

Dr. J. A. Swasey prefers a matrix made of brass. He does not want any obscure walls, but wants to see every portion of the cavity. He said a man who does not wedge a tooth and fit a matrix so that he can see all portions of the cavity is not an operator. Making a cavity a simple one is the object of a matrix.

Dr. McKellops said the teeth must be separated so that the operator can see every portion of the cavity. He does not think a good filling can be made if any of the walls are obscure. If a tooth is tender or sore from wedging he uses separators to hold it firm so that there is little or no discomfort from malleting. He thinks the object of every operator should be to relieve the patient of all pain possible.

Dr. J. Taft said there was a great difference in opinion regarding the use of the matrix. It was a useful article if properly used, but much faulty work was done with matrices. He uses

the partial matrix, covering one-fourth, one third or one-half of the cavity, where the cavity is such that he can see into it better by so doing. When he has filled nearly to the top of the matrix it is removed and the filling completed without one.

Dr. W. H. Morgan wished to challenge the idea that cavities could not be successfully filled unless the whole cavity could be seen by the operator, for he had himself made successful fillings where only a portion of the cavity could be seen. He uses non-cohesive gold, testing its solidity by the touch.

Dr. McKellops said that pure gold was always cohesive; there was really no pure non-cohesive gold. He said, of course a cavity could be prepared with the aid of the mouth-mirror, but you cannot make the operation perfect unless you can see every portion of the cavity. At least it takes a good man to do it.

Dr. Morgan: That is why I can do it. I can prove my assertions with any amount of specimens.

Dr. Johnson asked Dr. Allport to speak to the society about non-cohesive gold.

Dr. Allport said he supposed the gentleman meant the relative merits of the two. Each has its place, and neither can take the place of the other. We need both. He said to go back forty-seven years they had but one kind of gold—the non-cohesive. After using this it seldom happened that there was discoloration around the filling when made by a good operator, but the greatest objection was that the fillings scaled and the portions were thus lost. Next came the sponge gold which was all cohesive. This was just what was needed to use over the non-cohesive gold to protect the surface of the filling. Everybody lauded it and used the new gold because it would stick together. But there was soon a revelation; the teeth turned blue under these fillings. At the time it was thought it was due to impurities, but it was not so, but because the plug did not fit the cavity. It is the same to-day with cohesive gold and the majority of operations are not as permanent as when non-cohesive gold was used. The trouble is that the profession is out of the old way of operating. You cannot do with the mallet what can be done with hand pressure. By the use of the

mallet many teeth are unnecessarily destroyed. There is a tendency of the gold to draw away from the cavity walls when condensed in the centre of the filling. He said he had filled hundreds of teeth without seeing into the cavity with even a mirror except when it was excavated.

Dr. Brophy said the idea of the matrix originated with Dr. Dwinelle some thirty-five years ago. When thoroughly understood the matrix is a good thing, but when it is not it is worse than none.

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### THURSDAY MORNING SESSION.

Section IV, on Histology and Microscopy, made its annual report through its Chairman, Dr. Frank Abbott, of New York.

Dr. C. W. Stainton, of Buffalo, N. Y., read a paper entitled "Crownless Teeth."

The case presented was of three members of a family of six, showing an unusual hereditary occurrence of the absence of the crowns of their teeth.

The history is that the grandmother had such teeth and it was inherited. No history back of this could be traced. The father had poor teeth, inherited from his mother, the teeth being the poorest of the family of eight and entirely crownless. The models presented an appearance of the teeth having been cut off almost to the gum line. The peculiar formation cannot be accurately described without showing the models which will be fully illustrated in the transactions of the society.

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### REPORT OF SECTION V.

Section V, on Materia Medica and Therapeutics, made its annual report through the Secretary of the Section, Dr. Geo. E. Hunt, of Indianapolis. Among the remedies described were Pental, Aristol, and Bichloride of Mercury.

A. W. Harlan read a paper on "Europen, and Trichlor Acetic Acid."

Europen is a yellow amorphous powder made by the action of iodine, obtained from iodine of potassium, upon isobutylresol.

The average per cent. of iodine in the compound is 27.6. The powder is resinous to the touch and adheres tenaciously to wounds and the mucous membrane. It has a specific aromatic odor like saffron, which is not perceptible in mixtures or solutions. It is insoluble in water or glycerine, but readily soluble in alcohol, ether and chloroform, and solution made by the agents, it is also readily soluble in the fatty oils. Europhen in contact with water, such as the secretions of wounds, etc., gives off slowly small quantities of iodine, which immediately re-combine to form a soluble iodine compound. While alcoholic solutions give up iodine readily, the ether solutions give it off more freely. Mixtures with zinc oxid and mercuric oxid should be avoided. Lanolin mixtures are very desirable, as the lanolin takes up a great deal of water, and thus favors the formation of the soluble iodine compounds. All solutions should be made and kept in low temperature, free from light and moisture. Europhen when applied to wounds does not cake as does iodoform, neither does it produce toxic effects; it is not poisonous. Fifteen grains have been administered with no bad effects. When applied to inflamed gingival conditions, caused by the insertion of crowns or bridges, the soreness and irritation promptly subsides. It is also beneficial as an application to syphilitic ulcerations and irritations about the mouth; promptly allays the pain of an inflamed or suppurating pulp, the lanolin preparations being used in these cases. Take of lanolin 75 parts, of europhen 25 parts. This also makes a useful preparation to apply to an inflamed sore mouth caused by wearing artificial dentures. It will doubtless prove a useful dressing in the powder form for empyemia of the antrum. On account of the lightness of the powder it is peculiarly adapted to insufflation.

Acidum Chloraceticum—Trichlor Acetic Acid (C. 2; H. Cl. 3; O. 2). This is made by treating chloral hydrate with three times its volume of nitric acid and subjecting the mixture to the rays of sunlight until the red fumes disappear; this is then distilled and the portion coming over at 195° C. is pure Trichlor Acetic Acid. It is a colorless crystalline substance, and readily soluble in water or alcohol. It is a powerful caustic, readily

destroying the mucous membrane or epidermis. A three per cent. solution is a local stimulant—an astringent; a ten per cent. solution should be used to decalcify or remove the serual deposits from the roots of teeth in the treatment of pyorrhœa alveolaris and kindred diseases. As a cauterant agent, it is useful in destroying the pyogenic membrane in pus cavities; also for the destruction of morbid growths, hypertrophied or excessive tissue. A  $\frac{1}{2}$  to 1 per cent. solution makes an agreeable refrigerant mouth-wash.

#### SYRUP OF IRON CHLORIDE.

In all cases where an efficient preparation of iron is to be used as a tonic, the formula of Dr. Neld should be preferred. It is a non-alcoholic preparation, and as prepared by Parke, Davis & Co., it is not only an elegant but very useful preparation; no corrosive action of the mucous membrane or teeth is produced by it.

#### DISCUSSION.

Dr. F. Abbott said he was astonished that Dr. Koch had made such a mistake and that so many others had committed the same mistake by the continued use of bichloride of mercury.

Bichloride of mercury will destroy human life and it seems that it must kill micro-organisms. He had seen what seemed wonderful results from the use of bichloride of mercury in the mouth and relied upon it to a great extent.

Eminent surgeons will tell you that bichloride of mercury can be relied upon all the time. If they get good results from its use it seems to me that there must be some mistake in the experiments of this man Mc Clintock.

Chloride of zinc he thinks one of the very best remedies for pyorrhœa alveolaris. It does just as well as sulphuric acid and acts more kindly.

EUROPHEN.—If this remedy will relieve excoriations under plates, relieve the pain around roots of teeth, etc., it is certainly a remedy worthy of our consideration. Weld's Syrup if left to stand in an office for ten days or so will precipitate. Tincture of chloride of iron has done inestimable injury to the teeth, and if this remedy contains the original properties of the tincture,

the precipitation overcome, and will not injure the teeth we have got a wonderful thing.

Dr. J. S. Marshall: It is a mistake to think that every eminent surgeon uses bichloride of mercury, for many use sterilized water instead for disinfecting instruments, hands, etc., and washing the parts before operating. With this they have had better results than with bichloride of mercury.

PENTAL.—With regard to this and other anæsthetics Prof. Turet, Germany, reports 109,230 administrations with 39 fatalities; chloroform was administered 94,123 times with 35 deaths; ether 8,432 times with 1 death; ether and chloroform combined 2,891 times with 1 death; ether and alcohol 1,380 times, 1 death; bromo ethel 2,179 times, no death; pental 219 times, 1 death, which will show the average of deaths greater from use of pental than any other anæsthetic.

Dr. Peabody described his method of vaporizing iodoform which was substantially the same as given in our report of the Mississippi State meeting.

Dr. G. E. Hunt: As Dr. Abbott has said, bichloride of mercury is sure death to animal life. It should be remembered, however, that the higher and more complex the organized being the greater will be the influence of deleterious agents, and as we go down the scale to the simpler forms of life we find more resistance to the effects of these agents. While bichloride of mercury is poisonous to animal life it has not been proven that it is death to vegetable. The ideas advanced by Prof. McClintock are new to me, but the experiments have been carefully made and there may be a great deal of truth in them. Iodoform vapor is nothing new; it was brought out by Dr. W. H. Whitslar five years ago. It is my opinion that the iodine is evaporated and what remains is simply a carbonaceous residue which is aseptic but not antiseptic.

Dr. F. Abbott: Years ago it was thought that carbolic acid was the best antiseptic ever known. One says it is the best, while another sees germs working their way around in it, etc. It was afterward shown that when properly diluted carbolic acid would destroy germ life. Why? Because germs live upon

liquids, and if taken into the body it destroys. Now, it may be the same with bichloride of mercury, that in too strong solutions the micro-organisms refuse to take it, while in weak solutions, as  $\frac{1}{20000}$  or  $\frac{1}{10000}$  they take it and it kills. I use it in root canals in the strength of  $\frac{1}{10000}$ , but never stronger.

Dr. J. E. Low thinks iodoform is too disagreeable to have about the office, and he has had patients complain of tasting it for some months after its use. He does not think that a root can be perfectly disinfected by iodoform vapor; believes that phagocytes destroy the remainder of the germs.

Dr. H. H. Fuller said it was not the bacteria themselves that make the trouble but the dead tissue that forms food for the bacteria. In our operations if we get rid of obnoxious matter we get a cure. He thinks bacteriology has been carried too far, and that cleanliness is of more importance than the use of antiseptics.

Dr. C. N. Peirce uses Trichlor Acetic Acid on epulis tumors, spongy gums, growths over third molars, etc., applied by means of wedge-wood stick. For calcic pericementitis use on a spatula for cleansing roots, can use full strength if necessary. It has happy results on the tissues, being escharotic and astringent. It arrests pus accumulation in pyorrhœa alveolaris. For putrescent pulps force it into the root canals. It destroys the tissue and purifies in a few moments' time more perfectly than carbolic acid.

Dr. J. D. Patterson said he had been, for a few months, experimenting with the Stebbins' method of applying silver nitrate to cavities in deciduous teeth to check decay. He said if results were satisfactory it was certainly a good thing, and that the discoloration it caused was no objection if it only preserved the teeth.

Dr. J. Taft said that Dr. J. Taylor forty years ago recommended nitrate of silver for decay. He based his theory on the color of decay; that the black variety progressed more slowly than others, and as nitrate of silver turned tooth substance black it would probably retard the progress of caries. Since that time Dr. Taft has used it many times and knows that under

favorable circumstances decay will be arrested. After its use if the mouth and teeth are not kept properly cleaned the effects will not be so lasting.

Dr. McManus said his preceptor used nitrate of silver at the necks of the teeth as treatment for sensitiveness, and that it was successful all but the black line. He knows that Dr. Stebbins' cases are successful.

Dr. Peirce said nitrate of silver had long been used as an obtundent, but for the arrest of decay he thought Dr. Stebbins was the first to introduce it and should have that credit.

Dr. A. W. Harlan said that the theory advanced regarding the action of bi-chloride of mercury was old. La Place was the first to point it out. Five parts of tartaric acid makes bichloride of mercury absolutely reliable as a destroyer of micro-organisms. Equal parts of peroxide of hydrogen and  $\frac{1}{1000}$  sol. bichloride of mercury is effective. Europhen is an agent to take the place of iodoform; it answers all the purposes of iodoform and is lighter and much more agreeable. Trichlor Acetic Acid is useful for serumal deposits, a ten per cent. solution in water, and as an astringent for the tissues. It makes a good mouth-wash in  $\frac{1}{2}$  to 1 per cent. solution. The antidotes are bi-carbonate of soda or other alkaline salts.

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## THURSDAY EVENING SESION.

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### REPORT OF SECTION VI.

The Report of Section VI, on Physiology and Etiology was made by the Chairman, Dr. H. A. Smith.

Dr. J. D. Patterson read a paper on "the Effect of the internal Administration of Certain Drugs upon the Tissues of the Oral Cavity," in which the essayist referred to the prevalent idea that the internal administration of mercurial and iron preparations were markedly harmful to dental structures, and suggested that these views, while having much of truth, were also elements of error in regard to their administration and the effects produced. The essayist desired to call attention particularly to the mani-

festations of mercury in the mouth when given internally, and cited the description of the physiological effects as seen in the mouth as described in Potter's *Materia Medica*, as an accurate statement of these manifestations.

The essayist then gave the result of some personal observations to prove that these manifestations should not always be taken as an indication of mercurial poisoning.

The characteristic "blue line" which every text book describes as present in mercurial stomatitis, and is given as one of the ever present symptoms of ptyalism, is in fact, due to the local accumulation of salivary calculi, and in every case can be obliterated by one operation, and in no case that has ever been brought to his attention has he failed to verify this statement.

As to the "inflamed and spongy gums" the author also declares that this condition is susceptible of control and cure by means of hygienic agencies, cleanliness and antiseptics, and this, too, without discontinuing the administration of the mercury to the patient except in cases where the condition is the result of syphilitic taint.

These statements he makes on the basis of a series of experiments extending over two years, under favorable circumstances in regard to abundance in the supply of cases.

The author concludes from this that these conditions are not essentially a result of the exhibition of mercury, but are caused by a lack of hygienic attention to the mouth when this drug is being administered. It does cause congestion of the gum tissue, also an increase of the salivary activities, and there is generally less care taken of the mouth and teeth at such times and consequently greater deposits may take place. This is also parallel to the conditions existing during pregnancy. It is lack of care and cleanliness that causes the destruction of the teeth of women during confinement and not, as is generally supposed, a withdrawal of lime salts from the teeth.

The essayist closes with the statement "that he believes that much of the supposed ravages of mercury upon the tissues of the mouth may be safely ascribed to pure carelessness, ignorance and neglect."

This paper was fully discussed by Drs. Fillebrown, Morgan, Hunt, Smith, Barrett and others.

The annual report on the "Condition of Prehistoric Crania" was read by Dr. John J. R. Patrick, of Belleville, Ill., which was discussed by Drs. C. N. Peirce, H. A. Smith, and Louis Ottogy.

The Committee on State and Local Organizations appointed by the president, consisting of the following gentlemen, viz.: E. C. Kirk, Philadelphia, chairman; J. N. Crouse, Chicago, and Louis Jack, Philadelphia, presented the following set of questions, which they recommended for discussion among the State and Local societies during the coming year:

No. 1. Should examining boards have power to grant certificates of qualification to undergraduates?

No. 2. Should immediate root-filling be practiced while purulent conditions exist at the apex?

No. 3. What are the best materials to enter into the composition of temporary fillings, to be retained for a minimum of three years?

No. 4. What are the best methods for obtunding sensibility of the dentine by either local or general means? Should arsenic ever be used?

No. 5. What are the best forms of partial lower dentures, and the methods for constructing the same?

No. 6. Corrective dentistry; its present status. What are the simplest and most universally applicable forms of apparatus and most efficient retaining fixtures?

No. 7. To what extent, and under what conditions is the collar crown a cause of pericemental inflammation?

No. 8. In cases of congested pulp, should the arsenical application be made without preliminary treatment?

No. 9. What are the advantages and disadvantages of the use of the matrix—1st, with gold; 2d, with plastics?

No. 10. The etiology of pus-formation?

### FRIDAY MORNING SESSION.

The election of officers was held during this session, which resulted as follows: President, J. D. Patterson, Kansas City, Mo.; First Vice-President, J. Y. Crawford, Nashville, Tenn.; Second Vice-President, S. C. G. Watkins, Mont Clair, N. J.; Corresponding Secretary, F. A. Levy, Orange, N. J.; Recording Secretary, Geo. H. Cushing, Chicago, Ill.; Treasurer, A. H. Fuller, St. Louis, Mo.

Executive Committee for three years, Drs. W. W. Walker, and S. G. Perry, of New York, and D. N. McQuillen, of Philadelphia.

After the installation of the newly-elected officers the Association adjourned to meet in Chicago, in August, 1893.

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### The Colorado State Dental Association.

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The sixth annual session of the Colorado State Dental Association was held at Denver, Colorado, June 7 to 9, 1892. The following papers were read: "Dental Caries," Dr. P. T. Smith, Denver; "A Few words about Gold," Dr. A. H. Sawins, Denver; "Anæsthetics," Dr. T. C. Chamberlain, Colorado Springs; "Dental Education," Dr. Donaldson, Denver.

A very interesting clinic on Removable Facings in Bridges was given by Dr. Bryant, Denver. A fund of \$80.00 was raised by private subscription to assist the board of Dental Examiners in prosecuting violators of the dental law, \$50.00 of which was appropriated for the immediate use of the board. All dentists were urged to join the Dental Protective Association. Six new members were elected, viz.: Drs. Lloyd S. Gilbert, Denver, Colo.; Robt. Ketlner, Trinidad, Colo.; Issac Bryant, La Junta, Colo.; Lewis M. Raub, Central City, Colo.; G. B. Harlan, Montrose, Colo., A. E. Baker, Idaho Springs, Colo.

Appropriate resolutions were passed upon the death of Dr. R. J. Burns, of Denver. The resignation of W. K. Dameron, Denver, was accepted.

Liability of dentists for jury duty was fully discussed, and it being developed that no law existed exempting dentists, a committee consisting of Drs. R. B. Weiser, J. M. Norman and S. Davis, was appointed to secure the passage of such a law and to look after all legislation affecting dentists.

The following officers were elected for the ensuing year: President, Dr. J. M. Norman, Denver; First Vice-President, Dr. J. H. Beals, Denver; Second Vice-President, Dr. Rob't Keltner, Trinidad; Recording Secretary, Dr. W. A. Smith, Salida; Corresponding Secretary, Dr. Sarah May Townsend, Denver; Treasurer, Dr. Wm. Smedley, Denver.

The meeting adjourned to meet on the first Tuesday in June, 1893, at Denver, Colo.

FLORENCE D. COVERT, Cor. Secretary,  
306 Mack Blk., Denver, Colo.

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### Odontalgia Cured by Ipecac.

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Dr. Mossa, of Stuttgart, reports the case of a twenty-one year old and pale young man, of slender frame, who was much troubled with rheumatic pains. For eight days he had been afflicted with a very painful toothache. He had already had one tooth drawn, yet the pain had not ceased, but taken on another form. It proceeded from a molar tooth of the superior maxillary; it was piercing in character, and radiated into the right temple, ear and nose, and even into the other teeth. The pain would appear paroxysmally every few minutes with a jerk as though the teeth were being pulled out—worse by day than by night. The gums were, for some time, swollen and bleeding; this had been removed by nitric acid. His teeth were in bad condition in general; his tongue was coated and his appetite faulty.

The symptom, *paroxysmal and jerky pains* as though the tooth were being pulled out, led the writer to think of ipecac, of which the patient received several drops, three times a day, in a teaspoonful of water. The toothache and neuralgia soon ceased.—*Arch. fur Hom.*

## COMMUNICATIONS.

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### **What Changes Occur in the Teeth with the Advancement of Age.**

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BY V. A. LATHAM, D. D. S.

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To understand how age alters the teeth it is necessary to understand how they are nourished. Besides the pulp, peridental membrane and the main arteries we find a decided lymphatic system, or in other words, the ever-acting powers of osmosis are being carried on. This circulation is maintained in the fibrillæ of the dentinal tubuli, and life is thereby sustained in the dentine. As the tubuli anastomose with the canaliculi of the cementum at the periphery of the dentine, and the circulation is continuous between the two tissues, we depend on this circulation for the maintenance of life, sufficient for the toleration of the tooth by the living tissues about it, after the removal of the life source of the dentine, the pulp. We expect it to preserve not only the life of the cementum intact, but also to maintain some vitality in the dentine in contact with it.

Teeth at eruption are not so dense in structure, so rich in inorganic elements as at maturity. Again, this density usually increases with age and active employment, so that the dentine of old age and the dentine of adolescence are very different in quality. The former is nearly devoid of protoplasm, and the fibrils become calcified to some extent, and often the pulp itself; while the latter, though morphologically perfect is very incomplete chemically, and possesses a large quantity of mere protoplasm, which will need to be calcified before the dental tissues will reach their mature texture. Therefore, if this calcification can take place after the tooth is erupted and morphologically complete, we must believe from analogy that the polarity can be reversed and decalcification be possible under incitement of pathological conditions. Even physiological change of the circulating

fluids, such for example as occurs in pregnancy, induced perhaps by lime starvation, may cause molecular change, for we have every reason to believe that lime is taken from the teeth and the bones for the complete osseous system of the foetus and it is returned after the function is completed. Lactation also causes a disturbance and a draining of the system, though of a somewhat different kind, if the required lactic elements are not sufficient to meet the demand.

We are taught by physiologists that there is a constant splitting up of the molecules of which the body is composed, giving rise to different tissues and combinations in different parts of the body. Therefore, every deviation from the normal condition, no matter how slight, will interfere in the proper makeup and action of the organs, the teeth being peculiarly liable to suffer from the general malnutrition, inducing a chronic starvation, and by lowering their vitality and robbing them of much of this reserve store of materials, render them more liable to caries, waste of the inorganic elements of dentine and probably of enamel without compensation for the loss, thus carious attacks are easy. Again, there may be increase of density as transpires with age, by a more rapid construction than waste. If some of the teeth are lost and the patient requires much soft food, as the remaining teeth are thus prevented from getting a certain amount of antagonistic pressure which they require to retain them in the jaws, these teeth become loosened and elongated, which is a condition often seen in elderly patients.

If we examine the teeth of childhood and youth, whether temporary or permanent, we find them possessed of certain characteristics belonging quite uniformly to this period of life. The dentine and enamel are comparatively soft and unconsolidated and of exalted nervous organization; a preponderance of animal matter throughout the tooth, with lime-salts lacking both in quantity and arrangement, all yielding readily to decay in localities favoring the action of external destroying agents. The younger the tooth or the more imperfectly formed and consolidated, the more unfortunate to that tooth, then, would be the death of its pulp.

When the pulp has effected its work in the organization

of a perfect tooth of the same use and value as in the earlier periods of formation and nourishment, the pulp seemingly rests from its labors for a time and only takes on activity again when later in life it becomes an organ of destruction, for it is often seen that teeth with living pulps which at maturity and on to the period of systemic decline were dense, strong and decay-resisting, in old age speedily become fragile or soft and readily yield to decay. This seems, therefore, to point out that we must endeavor by all means to save the pulp in youth and adult life, but in more matured teeth its preservation is not of such vast importance to the tooth, and that in the decline of life the pulp may become the means of undermining the solid and resisting combinations found at maturity and thus exposing formed teeth to decay.

The tooth pulp differs in size and character according to age; the odontoblasts vary very much in form; in young pulps before the formation of dentine, they are roundish, or pyramidal; during their greatest functional activity the end toward the dentine is square and tapering, whilst in old age they become almost unseen and assume a somewhat ovoid shape. The pulp diminishes in size by progressive calcification and the pulp-cavity lessens. The pulps may also, in advancing age atrophy; the connective tissue is more abundant whilst the cellular elements diminish. The capillary system is obliterated and a fatty degeneration of the nerves takes place and the tooth is loosened in its socket.

Secondary dentine occurs from many causes, but it is also found as a pathological condition in aged teeth in which the pulp cavity is much contracted in size, and also very frequently found as a protective layer when a pulp is threatened by the approach of caries by the thinning of the walls of the pulp cavity through excessive wear. The dentinal tubules are also obliterated and even calcified, as there is the resemblance in the appearance of the translucent zone to that of the roots of old teeth which are supposed to be more rich in lime salts than ordinary healthy dentine. In young teeth the dentinal fibres are present and easily stain with carmine in the finest peripheric ramifications of

the tubules, but in those that are older atrophy of the fibres appears to be concurrent with obliteration of the canaliculi. The younger fibres possess a remarkable degree of extensibility, so that the dentinal cells may be separated to a considerable distance from the dentine without rupture of the processes, which then appear like harp strings stretched across the interval. In young fresh teeth of a calf, rounded and stellate cells may frequently be seen in the larger interglobular spaces, with processes which extend into the dentinal canals opening into them. The teeth seem, as years advance, to become coated with tartar to a much greater extent than even in adult life, and it is possibly, owing to change in the saliva and alimentary canal through dyspepsia, gout, rheumatism, etc., in which diseases tartar is often found in abundance; through it the gums are injured and the teeth irritated, loosened and elongated.

After the enamel is formed and calcified few changes, apparently, occur in it except as decay, though it has been seen with polariscopic light, the developed enamel exhibits strongly negative double refraction, whilst young enamel presents positive double refraction, showing, evidently, a change in the substance. The adult enamel becomes positive, however, if exposed to a temperature of 800°. C. Hoppe-Seyler gives in Virchow's Archives (Bd v Bd xxiv Zahnschmelz) a chemical analysis of the difference of composition in young and old enamel. In that of a newly-born infant the organic compounds are about 15-59, whilst the enamel of adults contains only 1-3 per cent. organic constituents, but on the other hand a large quantity of phosphate of lime. A remarkable feature I think in the analysis is the presence of a small proportion of fluorine. As yet little seems to be known of the changes age produces in the teeth and it will only be accomplished by making comparative chemical analyses of the various constituents of young and old teeth and also microscopical specimens to determine the various properties as to structure, appearance, etc., and any other conditions likely to be found which may be caused through increased or diminished circulation, as the arteries in advancing years become somewhat changed and may thus interfere with the nourishment of the mouth, teeth and associated parts to some extent.

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SELECTIONS.

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Gluten Foods.

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BY EPHRAIM CUTTER, M.D., LL.D.,

President of the American Branch of the Society of Science, Letters, and Art,  
of London; Corresponding Member of the Belgian and Italian  
Microscopical Societies, etc., etc., New York.

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WHAT IS GLUTEN?

The chemist says it is "the viscid, tenacious substance which gives adhesiveness to dough. It may be separated from the flour of grain by subjecting this to a current of water, the starch and other soluble matters being washed out. Gluten consists of gluten—a white substance resembling albumen, precipitated from an alcoholic solution of gluten by the addition of water—vegetable fibrin, and casein, with sometimes a fatty substance."

The morphologist (*morphus*, form; *logos*, account) studies the form elements of substances by the microscope.

Ordinary inspection is morphological, and differs from chemical as follows: Ask a chemist to analyze the contents of a court room. He would take the judge, jury, officers, plaintiff and defendant, the furniture, fixtures, floor, etc., reduce them to ashes by burning, test with reagents, balances, etc., and tell how much iron, potash, sulphur, and other chemical elements there are and their proportions. But the morphologist would look in the court room and say, There is Judge A; Mr. B, foreman of the jury; Mr. C, counsel for, and Mr. D, counsel against; there is Mr. E, sheriff; Mr. F, policeman; there are Messrs. G, H, and I among the spectators; there is a table; there are books, cushions, gas fixtures, plasterings, windows, walls, and so on. The morphologist would analyze the court room immediately by sight and distinguish its contents, while the chemist would present no individualities or distinctions by common names of forms such as everybody knows. Both chemical and morphological analyses complement each other. They do not antago-

nize. They should in all cases be taken together. The morphological examination of things is the common every-day inspection made in becoming acquainted with life.

The word "flour" means wheat flour.

Start the morphologist on flour and he will tell you that gluten is found in two forms :

1. In cells, called gluten cells, which surround the substance or parenchyma of the grain and contain the starch grains of various sizes mixed in with.

2. The second form of gluten, *i.e.*, granular and free minute dark-colored grains hard to distinguish from the same-sized starch grains. Iodine stains gluten granules yellow and starch grains blue.

The contents of the gluten cell ( $\frac{1}{875}$  inch in diameter) are made up of granular gluten  $\frac{1}{15000}$  inch in diameter on an average.

In the wheat envelope some make six coats, *i.e.* :

1. Epicarp, or outer coat.
2. Mesocarp, or inner coat of longitudinal cells.
3. Endocarp, transverse cells ; cigar coat.
4. Episperm, testa ; color coat.
5. Tegmen, gluten ; comb coat.
6. Gluten cells, perisperm.

Now, it is evident that coats 1, 2, 3, and 4 should not be found in pure gluten flour, nor should starch, 4 and 5. Granular gluten and in cells should be all the form elements found in *pure* gluten flour.

There are, however, mechanical difficulties which are in the way of completely separating starch and 1, 2, 3, and 4 from the gluten. One of these is the deep longitudinal groove in the wheat which bulges at the bottom and comes close together at the top. When the wheat is soaked and rubbed between the folds of rough cloth, 1 and 2 outer coats are readily removed with the beard. But the groove cannot be cleared. Coat 3 can be removed, with the exception of the groove, and with it goes the germ or plumule and radicle of the embryo.

So in pure gluten flour one must expect to find 5, or gluten coat, and 6, gluten cells. There should also be present the parenchymatous gluten, which is present in all flour, and without which bread could not be made. Starch entirely separate from gluten will not make bread, as it has no viscosity, will not vesiculate or form into bubbles from the retention of air, carbonic acid gas, steam or vaporized alcohol, all of which, forming in, make the dough rise by distending the sponge of gluten filled with starch.

Now, this gluten is obtained, as stated in our definition, by washing out the starch from the dough by a stream of water. It is rich in phosphates, soda, potash, and other mineral ingredients which go to make up healthy normal tissues and which are needful to make a fully equipped human body. This leads us to ask :

#### WHAT IS THE VALUE OF GLUTEN?

Magendie, the immortal French physiologist, says gluten by itself secures complete and prolonged nutrition.

Pereira, the great authority on *materia medica* in his time, says gluten is easy of digestion, and substances which contain it largely are readily digested even by invalids and dyspeptics.

Gluten is rich in phosphates and the mineral salts in a soluble form, which, as said before, are needed to maintain health. It is soluble mineral food. For plants it is a great thing to get soluble mineral food as farmers well know. So is it for man. Again, nitrogen exists in gluten. Although nitrogen is largely taken into the system by means of the lungs, it is not wholly settled as to the amount, and therefore we must rely on what we eat and drink for the nitrogen which is found so abundantly in the body tissues. Hence the value of gluten in the food.

Starch alone is incapable of sustaining life, but combined with gluten, as found in whole wheat, it sustains life indefinitely.

#### THE LAW OF THE BEAUTIFUL IN FOOD.

It is a curious ethical fact that the eye has set standards of food. It was so with Mother Eve in the Garden of Paradise. It is so with the fair daughters of Eve who bless the world and gov-

ern the diet in homes. Domestic ethics has ordained that flour bread must be white and light. But gluten in normal quantities makes the bread dark. This color does not answer the ethical requirements of modern society, hence starch takes precedence of gluten as a food, and people choose to live on food impoverished to a great extent of its gluten, regardless of the ills that come from trying to live on a food which does not possess the nutritive salts and organic compounds above named in normal quantities to balance the starch.<sup>1</sup>

In the writer's opinion the ills of defective eyes, teeth, hair, bones, cartilages, etc., or, in other words, the defects that are charged to modern civilization, come more from the withdrawal of gluten, from flour, which is such a general article of food. Not all the gluten is withdrawn from flour, else dough could not be made; but too much is withdrawn for health-giving purposes. The mills of fashion in food grind so fine, and fashions in food have such ruts, that to get people generally to give up the idea of whiteness of their flour-bread is as impossible as it is to get ladies to give up corsets. Hence any efforts to restore the lost gluten to the food should be warmly welcomed by all physicians.

There are many such preparations in the market, with so many claims to peerless superiority over each other that the mind is bewildered to know what is best. It is noticed that most of the so-called gluten foods do not come up to their own standards as stated on their labels. This is so true that the writer hitherto has morphologically found whole wheat ground fine, with all the coats left in after going through the smutting mills, the best gluten food. The Arlington wheat meal is a fair type of these meals. The writer, after careful studies of the morphologies of fæces of people who have subsisted on wheat meals, is not prepared to join in the wholesale denunciation of the presence of the coats of wheat in the bread. So far as their mechanically irritative effects are concerned, there is plenty of mucus to envelop such irritating substances, which are not so irritating as the intes-

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<sup>1</sup> See "Is Flour our Proper Food?" Transactions New Hampshire State Medical Society, 1875; The Doctor, New York, December, January, and February, 1889-1890.

tinal calculi shown in the museum of the Royal College of Physicians, Lincoln's Inn Fields, London. Still, meals do not make as good bread as white wheat flours, unless in very skilful hands. Moreover, so long as the curious ethics of modern times places the difficult art of breadmaking in the hands of the lowest class of unskilled labor—the ordinary careless, time serving, unthinking queens of the kitchen—it becomes an important question.

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### The Doctor as a Popular Leader.

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A statement having been made in a German professional work to the effect that Mr. Gladstone had prophesied that doctors would become the leaders of the people, a correspondent wrote to the Prime Minister for the purpose of ascertaining the truth of the matter. In reply Mr. Gladstone said: "So far as regards the exact words cited in your letter, I cannot positively say aye or no, and I rather think that I should in using them have added some qualifying or limited expressions. But it is certainly a fact that for a very long time I have believed the medical profession to be both in a state of absolute advance from the progress of its science—this, it may be said, is mere commonplace—and of relative advance from the particular features attaching to our civilization in its onward movement."—*N. Y. Med. Record.*

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EFFECTS of variously colored lights on insane persons have been observed by the director of the Milan (Italy) Insane Asylum. A melancholy patient in a rosy light improved perceptibly in twelve hours. In twenty-four hours he called for food, although for many preceding days nourishment had been administered to him against his will. Thereupon the director had rooms furnished in solid colors and confined patients to them. Green and blue were found to be the most quieting, rose the most cheering, red the most exciting. All the patients in the asylum will be confined hereafter in apartments furnished in colors to suit the nature of their maladies.

### Reminders of the Past.

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One of the most interesting exhibitions in connection with the recent Orientalist Congress in London is a collection of tools used by workmen in building the pyramids of Egypt. They were gathered and are exhibited by the illustrious Egyptologist, Mr. Flinders Petrie. These utensils indicate that ancient workmen had an astonishing acquaintance with many tools which we have been accustomed to consider essentially modern. Among the exhibits are solid and tubular corundum-tipped drills and straight and circular saws and chisels described as "not a bit inferior to those now used."

Black glass was once used for mirrors as well as transparent glass with some black substance on the back. It is related that the Spaniards found mirrors of polished black stone, both convex and concave, among the natives of South America.

A company has been formed at Christiania, Norway, to reproduce an exact model of the old Viking boat that was discovered some years ago in an ice floe.

Brandy is an invention of the French and has been known to the world for nearly 600 years.

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### Patent Medicines in Turkey.

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The Turkish Government, as is well known, has prohibited the entrance of remedies whose composition is unknown. The merchants who deal in these goods recently petitioned the government to abrogate this law but their request was not granted.  
—*Medical Review.*

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### Ratio of Physicians to Population.

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Dr. P. H. Millard, of Minnesota, (*Med. Review*), in a paper recently read before the American Academy of Medicine, gave the following as the ratio of physicians to population in various parts of the world: Sweden, 1 to 7,000; Italy, 1 to 3,500; Germany, 1 to 3,000; Austria-Hungary, 1 to 2,400; France, 1 to 2,000; United States, 1 to 600.

## Neuralgias and Neuralgic Affections.

At a recent meeting of the Medical College of Vienna, Benedikt read a paper on the above subject, in which he distinguished three kinds of neuralgias: (1) Of the nerve trunks or plexuses; (2) of the nerve roots; (3) of the terminations of the nerves.

In neuralgias of the nerve trunks and plexuses there are not only pains during the attacks, but apart from the attacks there are painful points over the tract of the nerve. In most cases all the nerves which issue from a plexus are more or less affected.

The prognosis of idiopathic affections of the nerve trunks and plexuses is very favorable when the specific treatment is applied from the first. Among the specific medicines, Benedikt mentions in terms of special approbation iodine and subcutaneous injections of phenic acid. The salicylates and antipyrine have a curative effect only when the natural duration of the affection is short. Narcotics should be given as little as possible, as they produce only a deceptive lull. The truly specific modes of treatment are galvanization and punctiform cauterizations. Benedikt compels the eschars following the cauterizations to suppurate for eight or ten days by means of an epispastic application, and never has recourse to more than one cauterization. This treatment is, in his estimation, so efficacious that when it fails one may affirm that there exists in the neighborhood of the nerve a lesion not yet appreciable, or a constitutional disease, and that this is the cause of the neuralgia.

Neuralgias of the nerve-roots are characterized by very intense intermittent pains without *points douloureux*. The nerve is painful to the touch, but this pain is alleviated by pressure. This variety of pain is met with in ataxia and in certain painful tics. These neuralgias at the commencement are unilateral; they denote often an alteration of the spinal meninges, in which case they do not coincide with neuralgias of the nerve trunks and plexuses—while the eccentric idiopathic neuralgias are often associated with peripheral pains or invade the nerve terminations. The unilateral, eccentric, idiopathic neuralgias of the roots have no tendency to follow an ascending course. Galvanization em-

ployed against these neuralgias gives no result, while faradization *loco dolenti* exercises a calmative but not curative action. On the other hand, the electric cauterizations over the seat of these neuralgias have a very favorable action. The cauterization must be applied over the roots which contain the sensory fibers of the region affected.

In the neuralgic affections of the nerve terminations (anthralgias, aphalagias) cauterization has also a very satisfactory effect. Faradization and the electro-static douche are very-efficacious against migraine. As most patients can not stand the treatment during the attack, it is better to carry it out in the intervals of the pains, beginning with three *seances* per week, then two, then only one; but the treatment must be persevered with a long time, from nine months to a year in many cases.—*Boston. Med. and Surg. Jour.*

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### To Stimulate Appetite.

In a lecture on "Concentrated Food in the Treatment of Pulmonary Consumption" (*Pitts. Med. Rev.*), Dr. Thomas J. Mays says that much can be done to stimulate the appetite. For this purpose he often gives the following:

|                               |                      |
|-------------------------------|----------------------|
| R. Acid Phosporic Dil .....   | $\frac{1}{2}$ ounce. |
| Acid Nitro-Muriatic Dil ..... | $\frac{1}{2}$ ounce. |
| Acid Sulphuric Aromatic ..... | $\frac{1}{2}$ ounce. |
| Tinct. Ferri Chloridi ....    | $\frac{1}{2}$ ounce. |

M. Sig.: Thirty drops in a half glass of cold, sweetened water during meals.

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### The Natural Result.

A great enthusiast on the subject of chest-protectors recommended them to people on every occasion. "A great thing," he would say. "They make people more healthy, increase their strength and lengthen their lives." "But what about our ancestors?" he was asked. "They did not have chest-protectors, did they?" "They did not," was the triumphant reply, "and they are all dead now—all dead."

### Walking.

Walking, if properly and regularly followed, would become not only a restorer of health to many who to-day are on the road to disease, but also a source of pleasure. Let the arms swing if you feel like it, and the limbs, too; open the nostrils and fill the lungs, and the movements will send a gentle electric vibration through the entire body, the result of which is the awakening of new life.

Never take the lazy gait, as it soon makes one tired, and produces languor. A little perspiration on the "home stretch" may prove to be a blessing, not only in carrying effete matter from the body, but in bringing an increased supply of oxygen into the blood, and putting the blush of health upon the cheek.

Perhaps the best time to walk is in the early morning. The air is then the most highly charged with the life-giving oxygen, and the freest from dust, smoke, etc., of traffic, which rises later in the day. At this time also the mind is liable to be more free from worry and anxiety, hence in the best condition to drink in the blessings of freshness for us on every hand.

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### The Cure of Tetanus with the Antitoxin Obtained from the Serum of an Immune Animal.

Casal (*Centralblatt f. Bacteriol. u. Parasitenk.*, xii, 2 u. 3, p. 56) has reported the case of a woman, twenty-two years old, who seven days after having received a lacerated wound of the right foot, and walking a considerable distance over damp ground with unprotected feet, presented manifestations of developing tetanus. For a week, under ordinary treatment, the symptoms progressively increased in intensity. Specific treatment was now proposed and assented to. Tetanus-bacilli were found in the pus from the wound on the foot. Six injections of the antitoxin prepared from the blood of a dog immune to tetanus were made at intervals of twelve hours; the first five contained twenty-five centigrammes, and the sixth fifteen centigrammes. Improvement soon set in, and was progressive to perfect recovery.—*Med. News.*

## Facial Paralysis.

Dr. Lusanna (*Rivista Veneta*) makes quite an extended study of the course and disease of the seventh pair of cranial nerves. He divides it anatomically into five portions :

1. Cerebral.
2. Bulbar.
3. Intra-cranial; the trunk of the nerve from its root to its entrance into the internal auditory meatus.
4. Inter-cranial; its traverse through the cranium.
5. Extra-cranial, from the stylo-mastoid foramen to its different terminal filaments.

These divisions are of much importance, not only from a diagnostic point of view, but also in rendering a prognosis. Lesions occurring in the second portion are often fatal; those in the first, third and fourth are serious, while those in the fifth are light.

The differential symptoms indicating the seat of the disease in its course, are :

- 1st Portion.—Cerebral, conservation of reflex phenomena.
- 2d Portion.—Bulbar, paralysis of the extremities.
- 3d Portion.—Intra-cranial, injury to the neighboring nerves.
- 4th Portion.—Inter-cranial, gustation of the anterior part of the tongue abolished. Hyperesthesia of audition.
- 5th Portion.—Extra-cranial, paralysis of the facial muscles not of the palate.

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## The Keeley Treatment.

While a patient at the Keeley Institute, at Lancaster, you published a line from me. Now, I will further report results.

You assert that after a discontinuance of the treatment, the appetite for liquor may return. I began on ale, at the age of five years; it awoke a craving which lasted until January 15th last, when I took my last drink at the Keeley Institute—"forty-seven years of the disease."

Graduated February 4th. Am pensioned for disease of stomach and resultant nervous debility. Nervous system shattered.

Never abused myself with alcohol, but used it for its supposed tonic effects. At last, however, as is always the case, the habit grew beyond control. Came home broken down with grip and stopped the use of the remedies. I can assert, upon my sacred honor, that at no time since my return has there arisen any desire for alcoholic beverages, and that the thoughts of them causes a constantly growing feeling of repulsion.

As to the presence of atropine in the treatment, Dr. Keeley, denies it. All I know is, the eye effects are those produced by atropine, but I can assert this: I have not seen a patient hurt by the treatment, and even if it did crowd a broken down man a little hard occasionally, think what the treatment does—frees a man from the “demon desire,” and a man who wants to get free should be willing to take more chances than the Keeley treatment calls for.

Welcome, even atropia, if it will knock out whisky. If you want to do a good act for humanity, judge the Keeley treatment by its results. I know nothing of its components, don't want to, but do know that I am cured, body and mind, of the faintest desire for the old enemy.

C. H. WEAVER, M.D.

Glenbeulah, Wis.

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### To Remove Rust.

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If Dr. Fridge will take a saturated solution of chloride of tin in distilled water, and fill (sufficiently full to admit the instrument) a large test tube; let the instrument remain over night, and next morning, rub dry with a chamois, after rinsing in running water, the instrument will be of a neat silver whiteness.

Ray, Ky.

MART L. BRODIE, M.D.

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### Boils.

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Boils may be aborted, says an exchange, by energetically painting them several times a day with strong tincture of iodine. The application should be made strong and frequent enough to make the painted portion appear black.

### Therapeutics of Gold.

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Dr. John Strahan in *Brit. Med. Jour.*, says: The best recent writers agree with the old authorities that gold will cure old cases of syphilis where repeated courses of mercury and potass. iodid. have failed. For instance, it is the best remedy in ulcerations of the throat, syphilitic ozena, diseases of bones, and syphilitic phthisis. At present gold is principally used for present neuroses, impotence, etc. Niemeyer used it much in hysteria, and Nogerath says it quickly cures chronic ovaritis, if uncomplicated. Gold salts, if pushed, produce salivation, which however, can always be distinguished from that due to mercury by not affecting the teeth, cheeks or gums. They seem to produce a more active cerebral circulation. At all events, the effect of gold upon the brain is remarkable. The intellect becomes much more active, great cheerfulness, or even mental excitement, like mild alcoholic intoxication, results. Gold salts are said to be aphrodisiac.

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### Keep Your Head Clean.

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Keeping the head perfectly clean is a great aid to health. A distinguished physician, who had spent much of his time at quarantine, said that a person whose head was thoroughly washed every day rarely took contagious diseases, but when the hair was allowed to become dirty and matted, it was hardly possible to escape infection. Many persons find speedy relief for nervous headache by washing the head thoroughly in weak soda water. We have known cases almost wholly cured in ten minutes by this simple remedy. A friend finds it the greatest relief in cases of "rose cold," the cold symptoms entirely leaving the eyes after the first washing of the hair. The head should be thoroughly dried afterward, and draughts of air should be avoided for a little while.

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SENSE.—Medical common sense is of greater value than a drug store.

## The Moral Side.

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In an address before the Marion-Sims College (*Alienist and Neurologist*, July, 1892) Dr. C. H. Hughes says :

The study of the physician includes the moral as well as the physical well-being of man, for the purity of the soul has much to do with the health of the body. The purity of the heart and the dominance of the body by principles of rectitude has much to do with the health and consequent happiness of present and succeeding generations. The direct and hereditarily entailed diseases which are the offspring of sin, and *vice versa*, which have filled and are filling the land with misery and woe, both physician and divine are alike especially interested in preventing. The psychology of sin and the pathology of crime are studies alike for doctor and divine.

The man who is sick in his soul is seldom well in his body, and the soul's affairs do not prosper well when the body is disordered.

Like the divine, the physician may also aid in healing "wounded in spirit and the broken hearted," and in "binding up their wounds." He may "minister to a mind diseased," and "with sweet oblivion's antidote cleanse the stuffed bosom of that perilous stuff which weighs upon the heart." He does this effectually through the modern successful management of melancholia.—*Med. and Surg. Reporter*.

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## Cocaine Poisoning.

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I notice a case of cocaine poisoning, reported in the *Satellite* for May, by Dr. J. A. Wessinger, of Ann Arbor, Mich.

I have recently had a similar experience.

Was called, March 1st, to see Mrs. M., who was suffering from malignant trouble of right breast. I at once decided to remove the growth. She objected to the use of chloroform, as she had taken it once before when, as she said, it caused some heart trouble.

I, therefore, decided to use cocaine. Having prepared a fresh solution, I proceeded to inject it into the subcutaneous tissues surrounding the tumor.

She was almost immediately seized with a severe nervous rigor or chill. The surface became cool and blue; lips pale and thin; respiration very slow and sighing; pulse 150 to 160 and irregular; with almost complete unconsciousness.

I injected brandy, and digitalis hypodermically, with hot applications, and within an hour's time reaction was fully established.

I then gave her a general tonic treatment, and on March 17th I resorted to chloroform and performed the operation, the patient making a good recovery.

I have been using cocaine almost recklessly for the last four or five years, and this is the first unpleasant symptom I ever met from its use. Was it the cocaine, or was it nervous shock?

I am a great admirer of cocaine—I use it often and use it freely as a local anæsthetic, and have heretofore regarded it as a harmless remedy.

It is the most satisfactory remedy for the painless (?) extraction of teeth I ever used; and for operations on the eye it has no equal.

J. D. WARFORD, M.D.

Linwood, Kan.

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### Salicylic Acid.

To increase the solubility of salicylic acid in water the addition of one part of acid to one hundred parts of glycerine and one hundred and fifty parts of water gives, it appears, the best results. This mixture is clear and miscible with water without any alteration.

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### Dental Neuralgia.

For neuralgias of dental origin, Prof. Da Costa said that gelsemium is especially useful. Begin treatment by giving five drops of the tincture three times a day, and increase to ten drops three times a day until the patient sees double, and then stop the administration of the drug.

### **A Method of Bleaching Sponges.**

In reply to "Reader" I herewith give a good method of bleaching sponges. The sponges should be freed from lime by immersing them in dilute hydrochloric acid. They then should be soaked in a 1 per cent. solution of permanganate of potash, removed and washed thoroughly with water; now press them dry; they are now to be put into a solution of one-half pound of hyposulphite of sodium in one gallon of water, to which one ounce of oxalic acid has been added; have them in this solution for fifteen minutes. Finally take them out and wash thoroughly. By this treatment the sponges are rendered perfectly white and remain so. Gerster advises the sponges to be kept in a five per cent. solution of carbolic acid until required for use. Sponges once used should be carefully washed with green soap and hot water before being put away again.

Toronto, Canada.

H. MORELL, M.D., C.M.

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### **Defining a Blush.**

A Cincinnati physician defines a blush as follows: "A blush is a temporary erythema and calorific effulgence of the physiology, ætiologized by the perceptiveness of the sensorium when in a predicament of unequilibrium from a sense of shame, anger or other cause, eventuating in a paresis of the vasomotor nervous filaments of the facial capillaries, whereby, being divested of their elasticity, they are suffused with radiance, emanating from an intimidated præcordia." That settles it. She's from Boston.

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### **Character.**

A man passes for what he is worth. What he is, engraves itself on his face, on his form, on his fortunes, in letters of light which all men may read but himself. Concealment avails him nothing, boasting nothing. There is confession in the glances of our eyes, in our smiles, in salutations, and the grasp of hands.—  
EMERSON.

### **The True Physician.**

Dr. T. Frazer Thomas, of Gainesville, Florida, is the author of the following sentiment touching the relations of the medical man to the lowlier members of his constituency: "The true physician will respect the feelings of the poor, both by the language and tone of voice in which he addresses them. He will remember that disease is his only passport to any house. He will act as a gentlemen to all, to the low, to the vile even, as well as the gentle and the rich. His duty is to heal, not to punish." Boerhaave said that "the poor were the best patients, for God is their paymaster." Because the physician receives no tangible recompense he must not forget his obligation to his patient nor his own self-respect.

In his intercourse with the world he must not be swayed by prejudice nor nationality. Friendship and good-will for all his patients are his polar stars, ever keeping in remembrance the priceless precept, "There is but one country—the earth; but one nation—the human race."

The principles set forth in the above lines, contain the gist, in a certain direction, of the true professional character.

It applies to the specialist as well as to the general practitioner, and with a special force does it apply to the dentist.—Ed.

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### **Simple Water Test.**

Into a ground glass stoppered, perfectly clean bottle put five ounces of the water to be tested. To the water add ten grains of pure, granulated, white sugar. Cork tight, and set in a window exposed freely to light but not to direct rays of the sun. Do not disturb the bottle, and keep the temperature as near 70° F. as possible. If the water contains organic matter, within forty-eight hours, an abundance of whitish specks will be seen floating about, and the more organic matter the more specks. In a week or ten days, if the water is very bad, the odor of rancid butter will be noticed on removing the stopper. The little specks will settle to the bottom, where they appear as white flacculent masses. Such water should not be used for potable purposes.

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## EDITORIAL.

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### **The Columbian Dental Congress.**

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The Executive Committee of the Columbian Dental Congress met in Chicago, October 22d, the chief object of which was the election of general officers for the Congress. According to a resolution passed at the previous meeting of the committee the election of officers was fixed for eleven o'clock on the day of this meeting. The Chairman directed this order of business to be taken up. After balloting the following persons were found to be elected, viz:

For President: Dr. L. D. Shepard, of Boston, Mass.; For Vice Presidents: Drs. W. W. H. Thackston, of Farmville, Va.; Henry W. Morgan, Nashville, Tenn.; A. L. Northrop, New York City, N. Y.; W. W. Allport, Chicago, Ill.; W. O. Kulp, Davenport, Iowa; C. S. Stockton, Newark, N. J.; E. T. Darby, Philadelphia, Pa.; H. J. McKellops, St. Louis, Mo.; J. H. Hatch, San Francisco, Cal.; J. B. Patrick, Charleston, S. C.; John C. Storey, Dallas, Texas.

Several additional persons were appointed upon the various committees.

A scheme or programme for the business of the Congress was outlined, which we will endeavor to give when it is completed, perhaps in the next number of the Register.

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### **West Virginia State Dental Society.**

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The first annual meeting of the West Virginia State Dental Society was held at Wheeling, October 5, 1892.

The officers elected for the ensuing year were as follows:

President—Dr. J. N. Mahan, Charleston; Vice-President—Dr. R. W. Tener, Wheeling; Treasurer—Dr. H. K. Jones, Parkersburg; Secretary—Dr. G. I. Keener, Morgantown.

## Ohio State Dental Society.

The next annual meeting of the Ohio State Dental Society will be held at the Neil House, in Columbus, beginning on the first Tuesday of December, 1892. This will be a very desirable place for the meeting; the building has been remodeled and refitted entire, and is under new management, and the best accommodation, in every respect, is assured. A large and commodious hall for the meeting will be furnished free of expense to the society.

The Executive Committee has been unceasing in its efforts to secure a good programme for the occasion, but at the present we are only able to give it in part; quite a number who were expected to read papers and present subjects have not as yet been heard from. The following subjects, however, will be presented, viz:

A paper on "Mechanical Abrasion of the Teeth."

A clinic, "Contouring with Gold and Plastics, Demonstrating the Construction and Use of Matrices and Supports;" also "Immediate Root Filling," by Dr. J. E. Cravens, of Indianapolis.

Second.—"Crown Work (Gold)," by Dr. Grant Mitchell, Canton, O.

Third.—Paper, "Present and Future of Prosthetic Dentistry," by Dr. Geo. H. Wilson, Cleveland, Ohio.

Fourth.—"An Exhibit in Crown and Bridge Work," by Dr. J. M. Cook, Toledo, O.

Fifth.—"A Talk on Some Practical Things in Dentistry," by Dr. J. G. Templeton, Pittsburg, Pa.

A number of other papers will be presented and clinics held, the particulars of which we cannot now give.

The confident expectation is that this will be the largest meeting of this society for many years; and it is to be hoped that the profession of the State will be largely represented, and that no one who has any State pride will let anything, which he can control, prevent his being present. The expectation is that the meeting will continue till Friday afternoon.

## The Pan-American Medical Congress.

The Preliminary Announcement of the Pan-American Medical Congress, to be held at Washington, D. C., U. S. A., September 5th to 8th, inclusive, 1893, is just at hand.

From this Announcement it is fair to conclude that this will be the largest gathering of medical men that has ever been convened in this country.

The initiative steps for its organization were taken at the annual meeting of the American Medical Association, in Washington, May 5th, 1891, when Dr. Charles A. L. Read, of Cincinnati, introduced the following :

*Resolved.* That the American Medical Association hereby extends a cordial invitation to the Medical Profession of the Western Hemisphere, to assemble in the United States in an Inter-Continental American Congress.

*Resolved.* That the Committee on Nominations be, and is hereby instructed to nominate one member for each State and Territory, and one each from the Army, Navy, and Marine Hospital Service, who shall constitute a committee, which is hereby instructed to effect a permanent organization of the proposed Inter-Continental American Medical Congress, and to determine the time and place at which the same shall be held.

These resolutions were unanimously adopted, and the Nominating Committee at once elected.

After this the Congress of the United States by joint resolution authorized the President to invite certain governments to send delegates to the Pan-American Medical Congress. That resolution is as follows :

A joint resolution was unanimously adopted by the Senate, June 3, 1892, concurred in by the House of Representatives, July 14, 1892, and approved, July 18, 1892, by which the President was authorized and requested to invite the several governments of the Western Hemisphere to send official delegates to the meeting of the Pan-American Medical Congress to be held in the city of Washington, September 5, 6, 7, and 8th, Anno Domini 1893.

A series of General Regulations and also Special Regulations and By-laws for the conduct of the Congress were draughted and adopted; these make provision for a very perfect organization.

The following are the constituent countries of the Pan-American Medical Congress: Argentine Republic, Bolivia, Brazil, British North America, British West Indies, (including B. Honduras), Chili, Dominican Republic, Honduras (Sp.), Mexico, Paraguay, Peru, Salvador, Republic of Colombia, Republic of Costa Rico, Equador, Guatemala, Hayti, Kingdom of Hawaii, Spanish West Indies, United States, Uruguay, Venezuela, Danish, Dutch, and French West Indies.

The Sections of the Congress shall be as follows:

1. General Medicine. 2. General Surgery. 3. Military Medicine and Surgery. 4. Obstetrics. 5. Gynæcology and Abdominal Surgery. 6. Therapeutics. 7. Anatomy. 8. Physiology. 9. Diseases of Children. 10. Pathology. 11. Ophthalmology. 12. Laryngology and Rhinology. 13. Otology. 14. Dermatology and Syphilography. 15. General Hygiene and Demography. 16. Marine Hygiene and Quarantine. 17. Orthopædic Surgery. 18. Diseases of the Mind and Nervous System. 19. Oral and Dental Surgery. 20. Medical Pedagogics. 21. Medical Jurisprudence. 22. Railway Surgery.

The officers of each section shall consist of Honorary Presidents who shall be residents of the constituent countries of the Congress; one executive President who shall organize the work of the section, direct its deliberations and deliver an inaugural address at its opening session.

The President of the Congress is Wm. Pepper, M.D., LL.D. of Philadelphia, and seventy-two Vice-Presidents selected from all the countries to be represented. The Secretary General is Chas. A. L. Read, M.D., of Cincinnati, there are nine assistant Secretaries. The Treasurer is Abraham M. Owen, M.D., of Evansville, Ind.

The executive President for each section has been appointed, also a number of Honorary Presidents and Secretaries.

Section nineteen, Oral and Dental Surgery, has been organized with M. H. Fletcher, M.D., D.D.S., of Cincinnati, Ohio.

as its executive President, and the following Honorary Presidents:

- Dr. Jose Joaquin Aguirre, Santiago, Chili.
- Dr. R. R. Andrews, Boston.
- Dr. E. A. Baldwin, Chicago.
- Dr. George Beers, Montreal, Canada.
- Dr. S. B. Brown, Fort Wayne, Ind.
- Dr. Emegdio Carillo, City of Mexico, Mexico.
- Dr. Wm. Carr, New York, N. Y.
- Dr. B. H. Catching, Atlanta.
- Dr. Geo. J. Fredericks, New Orleans.
- Dr. Ricardo Gordon, Matanzas, Cuba.
- Dr. J. H. Hatch, San Francisco.
- Dr. A. O. Hunt, Iowa City.
- Dr. Louis Jack, Philadelphia.
- Dr. H. J. McKellops, St. Louis.
- Dr. Francis Peabody, Louisville.
- Dr. J. C. Storey, Dallas, Texas.
- Dr. J. Taft, Cincinnati.
- Dr. J. B. Willmot, Toronto, Canada.

Thirteen Secretaries have been appointed, as follows:

- Dr. John S. Marshall, (English-speaking), Chicago, Ill.
- Dr. N. Etchepareborda, Tacuari 355, Buenos Ayres, Argentine Republic.
- Dr. Wilson, La Paz, Bolivia.
- Dr. Benicio De Sa, Rio De Janeiro, U. S. of Brazil.
- Dr. Luke Teskey, Toronto, Canada.
- Dr. Guillermo Vargas Paredes, Carrera 7, num. 638, Bogota, Republic of Colombia.
- Dr. J. Luis Estrada, Guatemala City, Guatemala.
- Dr. Geo. Herbert, Wailuku Maui, Hawaii.
- Dr. Rafael Rico, Escuela de Med., City of Mexico, Mexico.
- Dr. A. Lacayo, Granada, Nicaragua.
- Dr. Andres G. Weber, Corrales 1, Havana, Cuba.
- Dr. Angel Guerra, Monte Video, Uruguay.
- Dr. Ramon Campuzano, (Spanish-speaking), Philadelphia, Penna.

### **Knoxville City Dental Society.**

The Dentists of Knoxville, Tenn., have organized a city association to meet monthly. Its objects, rules and regulations are about the same as those of other local societies, viz: for maintaining the status of the profession, promoting its best interests, and for mutual professional and social benefit.

The officers are as follows: Pres. J. T. Cazier; Vice Pres. R. N. Kesterson; Treasurer, A. R. Melenda; Secretary, A. J. Cottrell.

The Committee of Arrangement: W. B. Robinson, and B. D. Brabson.

This is certainly a move in the right direction, and it will result in much good to the profession and the public in Knoxville and its vicinity.

The "Register" will gladly publish reports of proceedings and papers read in the society.

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### **Board of Examiners.**

The Ohio State Board of Dental Examiners will meet at the Chittenden Hotel, Columbus, on the last Tuesday in November, where it is important that all those interested should appear. The Board is desirous of completing its business so far as possible at this time.

GRANT MOLLYNEAUX,  
Secretary of the Board.

# THE DENTAL REGISTER.

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## COMMUNICATIONS.

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### **Antizymotics, or Agents which Prevent Fermentation and Putrefaction.**

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BY N. S. HOFF, D.D.S.

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Read before the Michigan State Dental Society.

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So much dependence is placed upon the efficiency of this class of drugs by the surgical profession that it seems desirable to know all that is possible as to the manner in which they operate when brought into contact with the tissues of the human body, and it seems desirable also that some classification should be made to assist in keeping in the memory the manner in which they should be exhibited to secure definite therapeutical results. It is evident that a classification based on our present knowledge of the cause of fermentation and putrefaction can not be entirely satisfactory, but due consideration should also be given to the results of clinical, though it be empirical, practice. We believe that a classification can be made that will bear out all the accepted evidence of scientific investigation and of clinical practice, and we submit a brief sketch of the principles involved in the destruction of living tissues by fermentation and putrefaction, hoping to make evident the basis of a classification which we think is not only scientific, but which will prove clinically practicable and satisfactory.

From our present knowledge of the action of the various agents producing destruction of organized tissue of both the vegetable and animal nature we are unable to make a differential statement that will be truly scientific. We would like to believe

that fermentation was a peculiar process taking place in vegetable substances only, and that putrefaction was only to be found where animal tissue was being broken down through the agencies of fermenting substances or minute organisms. The definition of the terms antizymotic and antiseptic would seem to convey this idea; at least the derivation of the words would imply that such a distinction might be made. Antizymotic is derived from *Anti*—against and *zumosis*—fermentation. Antiseptic is derived from *Anti*—against and *Sepo*—to putrify.

The process of fermentation is one that has a wide range in nature. It is the means by which existing organizations are broken down into molecular conditions, so that growth and development may take place and even life itself be perpetuated. For instance, food taken into the alimentary canal meets first with a substance in the saliva called ptyalin, which changes its starch into a substance that can be appropriated by those absorbent structures whose business it is to secure the pabulum for the proper nutrition of the tissue of the body. Gastric juice and the pancreatic fluid each contain a peculiar ferment which selects its peculiar kind of food and breaks it up into its elements, so that the absorbents may appropriate them to nourish growing tissue cells. We have an excellent illustration in the rotting of grain where a peculiar substance called diastase, has the property of changing the nature of the starch contained in the grain to an entirely different substance, so that the plant that is to grow from the seed may appropriate it for nourishment.

This class of ferments are called organic, because they are the product of an organized body, but they possess no organization, such as we find in another important class of ferments which are organized.

The organic ferments are chemical but not vital substances, and in the economy of nature they are useful agencies in procuring food and nourishment for organized living bodies, but are not largely concerned in the destruction of living tissue in the production of disease.

The organized ferments have a distinct and definite organization. They, under favorable conditions, exhibit all the phenom-

ena of life. They are capable of locomotion, grow and reproduce their kind. They exhibit many phenomena of animal life, yet microscopic investigation has determined their place as belonging to the vegetable kingdom. They are essentially seeds of plants. A body of protoplasm and a cellular wall or covering of a ligneous nature. Some are capable of destroying life in tissue and creating disease, and are called pathogenic; others are harmless or non-pathogenic. Some need air or oxygen to support life, aerobic; others live without air and are anaerobic.

Putrefaction is always accompanied by the presence of bacteria; and bacteriologists maintain that this process can not take place without the presence of micro-organism. It has been reasonably demonstrated that certain micro-organisms are the definite cause of specific diseases. The cholera bacillus has been successfully isolated, and the disease produced in healthy animals by inoculation. This is also true of many others; anthrax, typhoid fever, consumption, etc., can be produced by inoculating healthy animals with pure specimens of the micro-organisms found in these diseases. It is the confident expectation of bacteriologists that characteristic bacteria of every known disease will be determined by further research. Just how these minute organisms produce such destructive changes in living tissue is not definitely known. It has been observed that conditions favorable to their growth are moisture, body temperature, and a favorable medium. Excessive temperature, hot or cold, will inhibit their growth, or destroy them. 105° F will inhibit most varieties; at 32° F they will not grow. They will not grow in either an acid or alkaline medium. It is evident that the process is very closely allied if not identical with fermentation. It has been found that there is present in tissue affected with pathogenic bacteria a peculiar nitrogenous waste product, which has evidently been produced by the activity of the micro-organisms. It very closely resembles vegetable alkaloids, which are formed in putrefying mixture, and is usually poisonous. It is called a ptomain (from *ptoma*—a corpse) because it was first isolated from dead bodies. It is the ptomain that produces in animals the characteristic disease, poisonous or fatal results.

There exist in the body at all times various and numerous species or forms of bacteria. It is a wise provision of nature that it is so, for we find that the presence of the non-pathogenic orders have a decided tendency to modify or correct the action of the disease-producing species. The favorable conditions and presence of germs in so great a variety would seem to promise the speedy overthrow of all vital function in the tissues of the body were it not for the fact that nature has made provision for resisting the encroachment and interference of these organisms, which is brought about principally in three ways.

First, the fluids of the body are capable of destroying them by their acid character, or prevent their growth by their alkaline reaction.

Second, the white corpuscles of the blood and the connective tissue cells have the power to destroy the bacteria by taking them into their interior and digesting them. This can only be accomplished to a certain extent, and when more bacteria are present than the cells can digest, the cells themselves give way and are destroyed by the bacteria, and we have death and the putrefactive process set up.

In the third place, the bacteria overcome and destroy each other or are destroyed by their own products. If a wound is inoculated with several kinds of bacteria, one species will gain the ascendancy at the expense of the others, until it has by destruction so contaminated the media in which it is operating by its own activity and has produced a condition in which it can not grow; an excess of acid, or alkali, or alcohol; then its activity ceases and the germ becomes incompetent to produce its species. At this stage another kind of germ that thrives on the conditions present may take up the fight and change conditions to his own hurt or disadvantage, and he in turn is compelled to give way to a more vigorous successor.

This kind of a warfare will continue indefinitely, or, until by surgical and medical interference or renewed and reinforced vital function the system is enabled to overcome the parasitic influence and reestablish a normal and vigorous functional condition.

It is at this point that the interference of the surgeon or phy-

sician is needed to turn the process in favor of the attacked structures.

In order that the disinfecting process may be intelligently accomplished it is not necessary that we recognize the peculiar variety of micro-organisms which may be present, as fortunately the larger number are susceptible to, and will succumb to comparatively harmless agencies, and all can be reached by drugs contained in our *materia medica*.

The conditions produced by the different species are varied, according to the germ, but those which are especially concerned in the formation of gases and odors are of particular interest to the dentist. But all forms are liable to produce both gases and odors under the conditions present in most dental lesions, viz. : putrefaction of the pulp, alveolar abscess, pyorrhœa alveolaris, etc. It is not important here to enumerate the particular action of special species or forms.

We must classify all agents or drugs which may be used to overcome the influence or results of the action of micro-organisms under the general head of antizymotics, that is, agents which will prevent fermentation, for we are not justified in separating fermentation from putrefaction, for fermentation is an essential feature of putrefaction even in animal structures.

In the clinical application of antizymotics for the correction of disease, we find that all drugs and methods to be efficient must be applied in such concentration or power to effect the desired results, that continued application would result in the destruction of large amounts of valuable tissue that is not at all or only slightly affected by the encroachment of zymotic influences. And we have learned also that tissue which is not inoculated or only slightly affected can be kept in an aseptic condition by attenuated solutions of strong germicides or by milder agents, which we will designate antiseptics. We will, therefore, make a sub-classification of antizymotics into disinfectants and antiseptics. The disinfectant is the means whereby we aim to remove all infectious matter and agencies from the tissue ; the antiseptic is the means used to preserve the cleanliness obtained by the use of the disinfectant.

## Classification :

|               |                                  |                 |   |               |
|---------------|----------------------------------|-----------------|---|---------------|
| Antizymotics. | {                                | a Disinfectants | { | 1 Deodorants. |
|               |                                  |                 |   | 2 Detergents. |
|               |                                  |                 |   | 3 Germicides. |
|               | { b Antiseptics—no sub-division. |                 |   |               |

The disinfectant being the first agent applied in the treatment of a diseased condition we will define and discuss it first.

In the examination of a putrid lesion we usually find three conditions prominently present. First, an offensive odor ; second, the presence of more or less disorganized and lifeless tissue structure ; and third, we conclude from the nature of the process that putrefaction is going on and destructive micro-organisms are present in excess.

We have therefore three apparent and distinct conditions to contend with, and we are compelled to again divide our disinfectant process into three divisions. For our own convenience, reasons that are plainly obvious, we will first aim to overcome the obnoxious smell, and for this purpose we will make use of a *deodorizer*. Second ; we will need to remove all the decomposed tissue and such as can not be restored to normal condition. For this purpose detergent measures will be required. Third ; all fermenting and putrefactive agencies must be destroyed in order that the tissues may unhindered take on recuperative action. For this purpose germicidal measures will be resorted to. We then have disinfectants divided into deodorants, detergents and germicides, each indicating its purpose and place in therapeutic application.

In the practical application of these agents we find no sharp or distinct lines can be drawn, but the deodorants, detergents and germicides overlap each other, and it is possible to find all three virtues embodied in one agent. But in order to make our subject and classification clear, we will discuss only the virtue of the drug or method which applies to the particular division under consideration.

Deodorizing measures embrace First, the absorption or masking of the odoriferous gases in somewhat of a mechanical way ; as by charcoal, lime, earth, or highly volatile drugs such as the essen-

tial oils, carbolic acid, etc. These non volatile absorbents are the most durable and permanent in action. Secondly, the union of the gases chemically with agents which change their character and destroy the effluvia. The gases resulting from putrefaction are principally sulphuretted hydrogen,  $H_2S$ , nitrogen, and ammonia ( $NH_3$ .) And the deodorants are drugs which will give up oxygen or chlorine to unite with these gases to form sulphuric, hydrochloric and nitric acids. These compounds if formed in sufficient quantity and the possibilities of extensive dilution prevented, would act primarily as deodorants, secondly as detergents, as they would burn out the dead tissue, and finally as germicides because they would destroy the contained micro organisms. Thus it is theoretically if not practicably possible to completely disinfect a putrid mass, as for example the pulp of a tooth, by the application of deodorizing agents alone. The most satisfactory results will be had by endeavoring to do only one thing at a time, and although deodorizing may be only temporary in character, it will serve its purpose, and the other stages in disinfection will necessarily follow in regular order and in due time.

The *detergent measures* are more important, and may be divided under two heads, viz: surgical and chemical.

Under surgical measures we would include all operations for the removal of dead or diseased tissue that was beyond hope of restoration to normal function, by instruments, douches, actual cautery, and other mechanical means. These are the most important because, thorough, quick, convenient, safe and definite. It is not necessary here to undertake any description of these processes, as they are all familiarly made use of by dentists in the daily routine of office practice. The excavator, chisel, scaler, lancet, burring engine, and water syringe are detergent measures familiar to every dental surgeon.

The chemical detergents are no less important because of their necessity. But they must be given the second place because, they are slower in action, more painful, and not so thorough nor under such perfect control. Yet they are essential because many of the conditions requiring the use of detergents.

are so deep seated or so peculiarly environed that, extensive and destructive operations would be required. Operations of great delicacy are sometimes better done by these agents, for instance the removal of a portion of a diseased pulp. Idiosyncrasies of patients will frequently prohibit the use of instruments and resort must be had to chemical agencies; as for example in opening to an alveolar abscess. This class includes the oxidizers, escharotics and cauterants.

*The germicides*, the third division of disinfectants must be such agents or methods as may be applied easily and without causing injury to the structures associated with the disease.

The fact that extremes of heat and cold and all such drugs as are effectively used to destroy micro-organisms in inorganic solutions in the laboratory are injurious to living tissue, makes the proper selection of a medicinal germicide one of considerable importance.

The use of extremes of temperature for sterilization of instruments and appliances can not be too highly commended, but these means have a limited application in dental therapeutics.

Of drugs only such are applicable as can be applied to living structures in sufficient strength or power to destroy the infectious influence without injury, from poisoning or destruction of the tissue involved.

It should be remembered of a germicide under the head of disinfection, that it is not the idea to make repeated applications, but that one application alone should serve to sterilize the wound and prepare it for other less powerful agents which are intended to keep it free from the encroachment of disease producing influences.

This being understood we can readily see that very poisonous drugs in strong solutions may be applied to the limited areas, and to tissues of such limited absorbent capacities, as are generally concerned in operations in connection with the teeth and associated parts. To illustrate, we can safely apply a 1 to 100 solution of the bichloride of mercury, for the purpose of sterilization in the pulp canal, or to an alveolar abscess. But even in such favorable cases much injury could be done by repeated and continuous applications for any length of time.

The most useful dental germicides are, bichloride of mercury, carbolic acid, oil of cassia, and peroxide of hydrogen. The bichloride of mercury in solutions of from 1 to 100 or 1 to 500; the diluent being distilled water, or peroxide of hydrogen. This is a powerful poison and should be used with caution. It is not known definitely what the chemical reaction is, but mercuric albuminates are formed (indicating decomposition of the bichloride) and nascent and free chlorine is probably the active agent in the sterilizing process. It may act as a simple poison.

Solutions of carbolic acid in water of sufficient power cannot be made to produce satisfactory germicidal results without using solution of such high concentration that destruction of healthy tissues will follow its use, and most oils with which it will mix readily interfere with its germicidal power. The oil of cassia, however, has been found by Dr. Black to not only maintain but materially increase its range of power. In many cases of dental practice the amount of tissue destroyed by a 95 per cent solution of carbolic acid in water would produce no harmful results, but a solution of such strength is not applicable to pulps or gum tissue where it is important to save all the structure possible. Just what the chemical reaction of carbolic acid and oil of cassia may be we cannot tell, but it is probable that carbolates are formed of the proteid elements and the liberated hydrogen and oxygen uniting with the putrefactive gases, destructive acids are formed which act directly upon the micro-organisms.

The peroxide of hydrogen, the safest of all germicides though not so efficient as those above mentioned, undoubtedly owes its power to the liberation of the extra and loosely held atom of oxygen, with which it readily parts when brought into contact with substances having an affinity for oxygen. In its therapeutic application as a disinfectant it gives up its oxygen to sulphuretted hydrogen  $H_2S$  and ammonia  $NH_3$  to form sulphuric acid and nitrous acid gases which attack and destroy the micro-organisms. It is undoubtedly also true that a portion of the oxygen is absorbed by the red corpuscles of the blood and the impaired nutrition of the part reinforced so that the vital resistance of the tissue cells take a prominent part, (by resistance at least) in the sterilizing process.

The disinfecting process be it never so carefully and systematically accomplished, will leave the enfeebled tissues exposed and susceptible to renewed attack, unless guarded and protected by a faithful watch, which will not interfere with the normal healing process. This duty we assign to the antiseptics.

These drugs may be administered internally to be absorbed into the general circulatory system and so produce general and local effects, but as is generally the case in dental practice they may be applied locally with the intent to produce an effect on a limited area.

Drugs capable of producing an alkaline or acid condition in the blood (or cause acid or alkaline secretions of glands) would inhibit the development of bacteria and in this way act as local antiseptics although administered through the general circulatory system.

An antiseptic should be defined and thought of not as a germ killer, but as a germ preventive. To attempt an enumeration of the antiseptic drugs with their method of action and virtues would overreach your time and patience and my ability. But we may refer to some of the most important in connection with the principle involved in their use.

Referring to the published reports of Prof. Koch and other eminent bacteriologists we find that a solution containing one part of bichloride of mercury to 300,000 of water is capable of preventing the growth of micro-organisms, and so on through a long list to a one per cent. (1 to 100) solution of alcohol, until we are inclined to believe that almost anything is good enough to keep out the germ influence. But practically we find these attenuated solutions are of little or no use. These determinations were made in the laboratory where all the environments were fixed and could be recognized and regulated at will. But in the practical application new and diverse circumstances and conditions must be taken into account. If the drug is administered internally we must calculate the effect of the further dilution that the antiseptic will undergo, also the action of the living cells of the organism, the glands and tissues, upon it, to dilute or decompose and render it inert. The same allowances must be

made when the drug is applied locally, and in addition the fact that it will be absorbed and dissipated or mechanically removed by the secretions, and so further diluted that these tables can not in any sense be looked to for information as to the amount of any drug that can be efficiently used. The most we can get from them is a basis for clinical experimentation.

We have found by this clinical experimentation that all agents in the form of water or alcohol solution are practically worthless, because quickly absorbed and dissipated. An antiseptic dressing to be efficient must be constantly present and on guard to prevent the encroachment of the enemy, and we are coming to place more dependence on those drugs that are not readily decomposed or dissolved, but which still give up their elements in sufficient quantity under ordinary conditions to make them practicable. Hence we find the essential oils, either alone or as diluents of solids and powders, cerates and wax which will make adhesive mixtures, into which can be incorporated drugs having peculiar antiseptic properties, are coming more and more into use as local applications on the principle of persistent application and gradual absorption. By occasional renewing of these applications they may be kept continuously in service until nature has had a chance to restore the impaired structure to a normal and healthy function. In many conditions the application of these forms of antiseptics are inadmissible because of the difficulty of approach. In such cases the solutions or emulsions may be used by injection or spray, but it is as a rule necessary to make the dressings more frequently, consequently this form is less desirable.

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### Wash for Chapped Hands.

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Wendell recommends the following wash for chapped hands:

|                                    |           |
|------------------------------------|-----------|
| R Green soap, . . . .              | 1 part.   |
| Compound benzoïn tincture, . . . . | 4 parts.  |
| Glycerine, . . . .                 | 8 parts.  |
| Rose water, . . . .                | 16 parts. |

## **The Importance of a Knowledge of Bacteriology to the Dentist.**

BY CARRIE M. STEWART, D.D.S.

The importance of a thorough knowledge of bacteriology, to the dentist, can hardly be over-estimated.

Not only does he need an acquaintance with the subject in a general way, as regards the more common germs infecting the soil, air and water, and the pathogenic germs and their action in producing disease, but he should be particularly acquainted with the germs infecting the mouth, and of these, those which may be concerned in the production of caries of the teeth, would, of course, be of interest.

Beyond the investigations of Miller, Black and a few others, little or nothing has been done in this direction by any member of the profession, and even the names of the bacteria most commonly found in the mouth are unknown to the average practitioner, although he may be comparatively well up in other branches of the profession.

It has been satisfactorily demonstrated to even the most skeptical, that bacteria do exist, and that some of them are undoubtedly the cause of certain diseases.

When a new subject is alleged to be correct in at least one part, it behooves us to satisfy ourselves by means of investigation, as to the truth or falsity of the entire subject.

The practical importance of antiseptic precautions in all operations has been shown time and again in surgery. How often could the surgeon point to a wound which had healed without the formation of pus, before the existence of the pus germ, and the proper agent for the prevention of its growth had been demonstrated, in the days before antiseptic surgery was known? Very rarely, in comparison with the large number of such cases which are constantly occurring to-day, when the value of antiseptic treatment is recognized and the action of the operator guided accordingly.

Certainly, if micro-organisms play so important a part in medicine, they are not without interest to that specialty of medicine, dentistry. Probably we would more thoroughly understand the treatment of certain forms of caries and that mysterious condition, chemical abrasion, about which nothing definite seems to be known, if we knew more about the germs of the mouth, both normally and abnormally present, and their action upon its tissues under the various influences of the body, present in health and disease.

Taking into consideration the various theories which are advanced in explanation of caries of the teeth, there is a strong probability that the bacteria theory may lead them all.

It is claimed that constitutional weakness predisposes to decay of the teeth, but it is also appreciated by the physician that constitutional weakness predisposes to any disease.

Then another theory claims a large share in the causation of caries for electrical influences. This, however, could hardly be true of the teeth alone, although the action might be indirectly most manifest upon these organs.

Comparatively great importance has been given to the acid theory.

The bacteriologist has isolated the bacilli of lactic and butyric acid, the two acids which are said to play the greatest part in the process of decay, and it has been shown that the production of these acids arises from the action of these bacilli upon disorganizing matter, and wherever these germs are present the acids are found, if the action is sufficiently prolonged. After the formation of the acid, solution of the lime salts of the teeth occurs because of the action of the acid; however, the prime cause is the bacillus of lactic or butyric acid, as the case may be.

If the teeth are not kept thoroughly clean there will be material present for the growth of bacteria, and, kept at a uniform temperature in the mouth, they flourish readily.

It cannot be denied that acid fruits, etc., will cause decay by direct action of the acid upon the tooth substance; however, as decay commonly occurs, either putrefaction or fermentation of organic matter is the first step, and neither of these processes can take place without the presence of bacteria.

Believing in this, it would seem that, as prevention is better than cure, a system of "Oral Hygiene" would be a good measure to adopt.

As to the presence of germs in the more common diseases of the mouth it is needless to treat, as they are undoubtedly present as in the diseases to which other parts of the body are liable.

Recognizing the importance of the action of germs and the harm which may result from introducing a microscopic number, consisting of thousands of individuals, into the blood, the importance of antiseptic conditions in operations upon the teeth is manifest. Not only may the gravest constitutional diseases be transmitted from patient to patient by the careless operator, but it may be that with unclean instruments, we carry the germs of caries from mouth to mouth, causing loss of teeth which might, otherwise, have been spared.

We cannot understand this subject too thoroughly, any more than we can understand the action of the bacillus tuberculosis or comma bacillus too thoroughly.

If we would keep the body in the best possible condition, we must preserve the teeth, and no mechanical contrivance will serve the purpose so well as the organs nature has designed.

To be healthy, the body must be well nourished, and to be properly nourished the nourishment must be properly prepared for assimilation, and in this preparation thorough mastication is an important factor. Anything which interferes with this, interferes with the welfare of the entire body.

If, as is probable, germs are the cause of much of the mischief occurring in the mouth, then the dentist should understand oral bacteriology, and understand it well; the dentist of the future will do so.

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ONE of the best of Lawson Tait's axiomatic expressions is: "The road to success in the practice of our art lies not only in the knowledge how to deal with disease, but how to deal with men and women who suffer from it."

## Dentistry in the Forties.

BY L. C. WHITING, SAGINAW, MICH.

Read before the Michigan State Dental Society.

The year 1840 marks a transition period in dentistry, from the use of ivory, animal and human teeth, to porcelain teeth on gold and silver plates. Previous to this time, a large portion of the artificial teeth used in the profession were manufactured from tusks of the sea horse. Human teeth and the teeth of animals were used for spaces requiring but one or two teeth. The successful dentist of this time was of necessity an artist, for he had not only to carve the blocks of sea-horse ivory into the shape of human teeth, but must also color them. The coloring was done with a hot iron. This work was sometimes so cleverly executed that it escaped ordinary observation, and was almost able to defy detection.

The principal defect of this ivory was its tendency to decay, and those wishing clean mouths and sweet breath required the constant aid of a dentist.

The usual way of keeping teeth in place was by gold bands attached to the natural teeth, or by pivoting them to roots. When but one or two teeth were required they were sometimes fastened by gold wire, but oftener by hickory pins, passing to cavities already existing or made for the purpose in the natural teeth. The natural teeth were pressed apart to set these in place. Full upper and lower blocks were held in position by spiral springs made of gold wire. These springs were used on gold plates for several years after porcelain teeth came into use.

Many full sets of porcelain teeth were inserted without plates. The teeth were held together by gold bands, or facings, and spiral springs were used to hold them in position in the mouth, imitating the sea-horse block work.

Parts of sets were made with gold facings and fastened to roots of teeth and to adjoining teeth with gold pivots and bands. The first set I ever made was of this kind, and I well remember

the difficulty I had in cutting the band to fit the backs of the teeth. It was practically the same as our present bridge work, with the exception of the present improved fastening.

The durability of this work depended upon the condition of the roots. So many failures occurred that most dentists abandoned it and recommended extracting all roots and badly diseased teeth, and replacing with gold plates and teeth.

Dentists, as a rule, kept their improved methods a secret. I have paid one hundred dollars for half a day's instruction. Dr. Dodge, of New York City, took out a patent on atmospheric plates about the year 1844. The *American Dental Journal* was the first periodical in the interest of dentistry brought to my notice, and it was ably conducted. Amalgam was condemned, and no dentist used it who wished to stand well with the profession. Stockton also published a paper, which came out once a month.

The treatment of decayed teeth was very different from our present processes. Superficial decay was removed with the chisel and file. Large V-shaped spaces were made between the teeth, not only to remove decay but to prevent it. These spaces were called self-cleansing. When the decay was deep, the cavity was filled with gold or tin foil, but never built out, as at present. Lead was used to cap exposed nerves and gold put in over it. Front teeth, such as we now fill, when thought to be too much decayed to save, were cut off and pivot teeth inserted. Freshly-exposed nerves were taken out with a barbed wire and an artificial crown put on immediately. When the nerve was freshly exposed no future trouble was expected. When the nerve had died from exposure more care had to be taken, and some treatment was given to make them healthy before inserting the artificial substitute.

Transplanting teeth was one of the hobbies previous to the year 1840. Frequently persons would buy teeth of those in poorer circumstances, and have them transferred immediately to their own mouths. Serious cases of blood poisoning soon checked this branch of dental surgery.

Porcelain teeth were used in Paris some time before their introduction in this country. Billard, of Paris, had a world-wide

reputation for making what was then called incorruptible teeth. Dentists in this country soon commenced manufacturing teeth and made improvements on them. Stockton, of Philadelphia, took the lead. Drs. Spooner and Allcock, of New York, and others, made teeth for their own use. Dr. Allcock was the first to arrange them in sets. Previous to this time, each dentist had to select and arrange his own as best he could, from a promiscuous collection. Every tooth had to be examined to see if the rivets were in the right place and otherwise perfect. Perfection was aimed at but not always attained. Human teeth had been freely used in the ordinary modes of dental work. After the battle of Waterloo twenty bushels of teeth are reported to have been extracted from the fallen soldiers for the use of dentists. Impressions of the mouth were taken in beeswax. Plaster impressions of the mouth were a great advance in the manufacture of artificial plates.

Previous to continuous gum work no practical method had been adopted for plumping out the mouth and face to its original shape, thus, in a measure removing the visible ravages of age and decay. Many were willing to pay a large price for artistic work in this line. Dr. John Allen, of Cincinnati, received five hundred dollars for a full upper and lower set of teeth with plumpers.

Later improvements in the dental art are so familiar to you all that they need no mention in this article. We take pride in our present achievements in filling teeth, but I doubt if we can boast of a greater percentage of success than the dentists of fifty years ago. Dr. Bancroft, of Almont, sends me some teeth which he says I filled for him previous to 1850. This was before any preparation of cohesive gold was used. The teeth are well preserved; although the fillings are soft, they accomplished what was aimed at, the preservation of the teeth. I have a tooth from my own mouth which was filled with amalgam, and as far as the filling was concerned did service for forty-five years. These fillings were put in as an experiment, and were made of filings from a Mexican dollar amalgamated with quick silver and made soft by the addition of tin foil. I believe it as good as any amalgam of the present time.

## Combining Business Methods with Professional Methods in Dealing with Our Patients.

BY C. B. BLACKMARR, D.D.S.

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Read before the Michigan State Dental Society, June, 1892.

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I shall not be disappointed if the older practitioners of dentistry are not interested in my paper, because they may be supposed of course to have mastered the problem of how to manage their patients in a business, as well as in a professional way. They have their certain families for whom they perform the operations necessary for the keeping of their teeth in proper condition. These patients are told to present themselves from one to four times a year as the individual case may require. Time is saved and appointments are made ahead to correspond with advice given the patients. A dentist thus caring for a certain number of families, has his time so taken that he has no time to attend to transient patients or those who happen into his office wanting a "nerve killed" or a "tooth plugged" at once. His lady assistant will save this dentist's time by not having him see the patient at all, and will answer the patient by saying that the doctor's time is already taken by previous appointments for the day. As a dentist can work for only one patient at a time the answer is very conclusive. If, however, this transient who has happened in *happens* to represent a family which the dentist is *anxious* to secure as one of *his*, it *changes* matters some. Short appointments between others will be made at once and longer ones in the future, and so this dentist keeps himself busy with those he desires most to have; keeping those who appreciate his work the most, and those who are willing to pay him what his time and skill are worth. Keeping those who care most to keep their teeth, and who appreciate and desire the better class of dental operations. Letting go those who do not. A dentist having such a well-managed practice has reason to be satisfied as far as business success in life is concerned and with the pleasantness and satisfaction of his work. This man will be satisfied

with his income and work to the end, barring accidents, sickness, etc., if he keeps up with the times.

There are, however, some of the older practitioners who are not as satisfied as I have pictured this dentist. And why? Is it on account of lack of professional knowledge or methods? No. It is rather a lack of business knowledge and method. To illustrate: I have one of these dentists in mind now, a very conscientious and excellent dentist, one who practiced in a good-sized city for twenty-five years or more, and at one time, for several years, had an excellent practice to manage. But he "never saved for a rainy day." He never has owned a home—unless it was one on which there was a mortgage, which always took the home. He has his life insured I believe, by the way. And now it is pitiful to see him try to make income pay expenses, and as he is growing older the struggle is growing harder. He often will look at a tooth with mirror and explorer and talk an hour about it to the patient telling about the fee, what would have to be done if he should find the nerve exposed, etc., when the same length of time would have filled it. Well, at last he makes an appointment and says, "come at half past one or two" and as he was not exact in regard to the time the patient was not in coming, and came at nearly half past two. The tooth was filled and finished about half past four—too late for him to have another patient, so this constituted his afternoon's work. Upon the patient asking the amount of his fee, he said to himself: "one hour's consultation and two hours operating, I ought to have six dollars," and so he said to his patient. Now, he wonders why the patient don't come back to him again, and he wonders why he don't make more money, because six dollars was a good big fee for such a filling, while the facts in the case were these: She had happened to have a filling of like size, etc., put in for three dollars, in one hour, by another dentist who works by the hour and makes his fee according to the demand for his time and skill. He put this filling in from one to two o'clock, and three others from two to five o'clock, making his afternoon's time bring him in an income of twelve instead of six dollars. The

first is called unreasonable in his charges, the other reasonable, and yet the latter gets more pay for his time.

And another case, I remember, was one of the best "gold fillers" I ever knew, but his management was bad. He kept a lady patient once in his chair from nine A.M. till six P.M., putting in two fillings. This was nothing uncommon for him. The dentist had his dinner, the patient none. Now, those fillings were elegant professionally but failures financially, and he wondered why she never could bear to come back to his office again when he had worked so long and hard to please her. And her brother refused to rent to him an office in his block, because he was afraid he would not have patients enough so he could pay rent, and at present he cannot meet expenses, rent, etc., and yet his professional skill is unquestionable. I think we waste a good deal of time by simply not doing what we have to do by combining business methods with professional methods. I have seen a dentist argue with a patient over the difference in the fee for filling with gold or cement, when both could have been done in the time thus spent. I have seen a dentist sit around waiting for a cement filling to harden long enough to fill and finish a gold filling in the same cavity, and the only reason for not putting in gold was the extra expense to the patient.

I said at the beginning that I did not expect to interest the older practitioners, but to the younger ones who have just graduated this subject may be more interesting, because at college they have been taught to fill teeth, etc., to please their teachers in a professional way, but now that they are in their own offices they have their patients to please instead, and that is quite a different affair as far as business matters are concerned, and these matters are quite important usually as one commences his practice. He must please his patients. He must study each individual case and find out what will please, and make his fees correspond with his skill and with the worth of his time, charging more as they are worth more, or less as the case may be. Then he can regulate his practice into a specialty or in any way he chooses later. This ability to please will give a young graduate a good start by giving him at first plenty of patients,

who can be managed in future as best suits him. And he should start in to be honest in all his doings. Patients like to trust themselves to an honest professional man; to illustrate: I knew a young graduate who had had his office opened for a month or so, and a bookkeeper thought he would try the new dentist and went to make an appointment. The dentist told him he could not give an appointment before six weeks, as his time was all taken with previously-made appointments. The bookkeeper, doubting the dentist's statement, watched for and got an opportunity to glance at the appointment book and saw no names between the present week and the sixth. This dentist wondered why the bookkeeper cancelled his appointment. Again, I knew a young man who was trying to establish himself into a high-class practice by making high fees, and he gave his patients the reason for his high charges that he used a very superior quality of gold, compared with what other dentists used in the city, and this dentist wonders why some of his patients don't come back to him, after they have investigated the subject of prices of gold foil and the amount required to fill ordinary cavities.

A dentist gets a suit of clothes and has the price charged to him with the hope the clothing merchant will "patronize him." The merchant after sending bill, followed by collector, without getting his pay, concludes he will have to "take it out in dentistry," and so sends in some of his family and "gets even" at last, and the dentist wonders why he don't come to him again, and why? Because this dentist did not treat this business man in a business like manner, although he may have treated his teeth very professionally. I once saw a very conscientious dentist work and struggle with a nervous, kicking, crying, eleven year old boy for three hours and finally got in two gold fillings. These fillings were polished in a very professional like manner and the dentist received four dollars as his fee. He expected the boy to see for himself in a short time what an elegant piece of work he had done for him, and expected him to come back to him again. But instead the boy went to another dentist who put in two cement fillings in the opposite places to the gold.

This took him thirty minutes and he charged the boy two dollars, and told him to come back once in a while and let him see them, and after he was older and the teeth less sensitive he would put in gold and hurt him very little. Now which, think you, got the patient in the future and which got the most for his time? Which was the most satisfied with the results of his work? Which was the patient most satisfied with?

I have seen a dentist talk with his patient or hunt in his records for thirty minutes, to find out the condition of a tooth, when one minutes examination of the tooth would have told him better.

I have heard it said that if a dentist could have one of his teeth filled once a week he would treat his patients better. And I have often wished that some of these dentists who do not economize their time would go into any good business like office, whether it be a mercantile, express, post, law or dental office, and notice how quickly and decidedly their questions will be disposed of, and themselves too by the ones having charge of the office. It does seem as if the prompt business like answers would make such a dentist wonder why he could not dispose of his own business and professional matters in the same way. At least set him to thinking about it, and that is simply what I have tried to do by writing this.

I have sometimes thought that writers and talkers on many subjects, whether in a prayer meeting or at a dental meeting, were practically the poorest ones to *work* it out, and now as I think of my paper and myself I can see no reason for changing my theory.

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## Difficult Dental Prosthesis.

BY I. DOUGLAS, D.D.S., ROMEO, MICH.

Read before the Michigan State Dental Society.

A very peculiar case came to me in August, 1852. A peddler had been wearing a plate which was never satisfactory, and was finally obliged to discard it altogether. His four upper incisors and all of the osseous structure which had supported them, were entirely gone, even up to the floor of the nasal passages, and arching as far back as the posterior approximate surface of the first bicuspid. The cuspids, however, were in place. In line with the bicuspid there was an oval opening into the nasal cavity, three-eighths of an inch long from front to back, and one-fourth of an inch wide. In line with the twelfth-year molars, a little to the right of the center, there was another opening into the nasal cavity, slightly smaller than the first. Without these two openings being closed he was obliged to hold his nose in order to articulate so as to be understood.

As the second bicuspid on either side had been filed away preparatory to filling, there was opportunity for clasps that would rarely show.

On account of the difference in price, he chose a silver plate in preference to gold. The impression was taken in wax, and the model and dies gotten up in the usual manner. In swaging up the plate to fit the roof of the mouth, it was allowed to extend backward to cover the smaller of the two abnormal openings, and forward to the line where the soft tissues began to droop to the lip, the edge of the plate turning downward slightly.

The plate was then placed upon the zinc die, and built in with plaster to make it correspond with the form of the natural gums. An impression of these newly constructed parts was taken, new dies were prepared, and a second plate was swaged, the edges of which should come in contact with the first. These two plates were soldered together, the space between them corresponding with the missing parts of the mouth.

The clasps were now fitted to the selected teeth, and plate and clasps put in place. Impressions were taken, on each side separately, of the relative position of plate and clasps, to aid in soldering them together. A piece of warmed wax was pressed against the plate and clasps, then chilled with a bit of wet cotton, and loosened by a quick motion so as not to bend the wax. The plate and clasps, after being removed from the mouth, were placed in position and carefully imbedded in a mixture of one part plaster and two parts sand.

After soldering the clasps to the plate, the teeth were ground and backed in the usual way. When the teeth were to be soldered to the plate, a little borax and solder were placed on the seam between the two plates, as a precaution, lest the reheating should cause some of the first solder to flow away.

After the patient had worn this plate four weeks, he reported that it was perfectly satisfactory.

CASE 2. In 1882, a traveling German called, having lost his two upper central incisors, and one lateral, also the right sixth-year molar. There was an opening through the palatine arch, into the nasal cavity, oval in shape, midway between the cuspids.

There would be no difficulty in making this job with clasps; but he had been wearing a plate with clasps, and, as a result, had lost one molar; and both of the bicuspid on the other side were badly decayed from being filed to make room for clasps; consequently he wanted no more clasps. Being informed that he could have a job without clasps that would keep its place except in case of sneezing, coughing or vomiting, he replied that he was an inveterate sneezer. So he finally decided to allow a gold clasp around the right twelfth-year molar to guard against its being thrown out of the mouth by spasmodic action. Accordingly, the plate was made with two air-chambers, one on either side of the opening; the air chambers, front and back, approaching each other to within one-eighth of an inch. A portion of the upper side of the plate was allowed to extend upward nearly through this abnormal opening, round the top of which just above the bone, was a very slight rim. This was to prevent

the air and the secretions from the nasal mucous membrane from passing downward as readily as they would otherwise.

Before fitting this plate, the ends of the clasp were bent slightly away from the tooth. When the plate seemed to fit all right, the clasps were again put in place. After a trial of a few weeks, the patient reported the denture satisfactory.

CASE 3. About 1852, a Mr. S. had Polypus in the nose. A physician gave him calomel to use as a snuff to destroy the abnormal growth, which it did; but it also destroyed the entire nose and upper lip. In due time he went to the surgeons in Ann Arbor, who took material from his cheeks to make an upper lip. A year or two later, he returned, and they took material from his forehead and made a nose. The improvement in his appearance was very marked; for, instead of an unsightly black looking hole, he had quite a respectable looking nose. But, being without bony or cartilaginous support, it flattened down after some years.

About 21 years ago, this man came to me, having lost his four upper incisors and one cuspid. I made him a denture; but in order to do this, it was necessary to cut off each side of an upper impression tray, till it measured only one and three-eighths of an inch in the widest part; for when he opened his mouth as widely as he could, the opening was only a trifle over an inch across and around.

At the time of making this partial plate, I informed him that unless he persevered in stretching his lips, he could never have a full set of teeth; that this would be necessary, as he was going to lose all of his natural ones.

This same man came to me a few months ago for a full set of upper teeth. Measurement with inside calipers showed that an impression tray must be at least two and one-fourth inches wide by two inches long. A No. 4, S. S. White tray was given to the patient, and, after repeated trials, he with difficulty succeeded in putting it into his mouth, after bending inward both lateral sides.

To add to the difficulties of this case, the passage between the throat and posterior nares is entirely closed; also, there

are no angles to his mouth. In taking the impression, it was necessary to use as little plaster as possible and before removing the impression, the surplus plaster had to be trimmed off from each side; and even then the extreme tension started the blood. There was no further difficulty in completing this set. The back teeth were set as far outward as seemed prudent. The patient had to put the plate in sidewise, and turn it around afterward. But the work was satisfactory, and the patient returned in a few days for a lower set.

Here the difficulties seemed insurmountable. I could not introduce a lower impression tray to ascertain if it were the right size. I went to our machine shop and borrowed a pair of two-jointed, double-setting, inside pliers, with these, I ascertained that a No. 3, S. S. White tray had to be spread to make it wide enough, and the mouth only about an inch and one-fourth across. The tray must be cut in two, and the impression taken in two sections, or made so afterward. Shaping a piece of wax to the upper surface of the handle of the tray, and letting it extend a little on to the tray proper, and using this for a pattern to make a mold, a piece of britannia was cast to fit the handle and tray. The handle itself was strengthened by adding solder to the under side. Four holes were then drilled through the new plate and tray handle, two on each side, and four guide-pins were fitted to the holes. The tray was next sawed in two through the entire handle, while the britannia plate was left in one piece, and served to hold the two pieces of the tray together and secure by the pins.

In taking the impression, the two halves of the tray were filled with plaster and introduced into the mouth separately, then locked together by the britannia plate and guide-pins and pressed down to its place.

Some modeling composition was taken from a basin of hot water and fitted to the underside of the handle, and then cooled with a napkin wet in cold water. The plaster impression was raised from the jaw, and the britannia plate removed; leaving the modeling composition to hold the two sections of the tray together. A ribbon saw was next inserted between the two portions of the tray, and the plaster sawed part way and then broken

and removed from the mouth in two parts. Thus a perfect model was obtained.

It was necessary to strengthen the wax trial-plate by three wires, one on either edge of the plate in addition to one on the lingual side of the ridge, just out of the way of the teeth, for the patient was obliged to put the plate into his mouth sidewise and then turn it around. The bite was secured by putting soft wax on the trial-plate. When the plate was ready to fit, in order to adjust the occlusion, a thin sheet of wax was pressed over the grinding surfaces of the side teeth, for the patient to bite on. When the occlusion was nearly exact, the indications for its completion were obtained by placing a strip of carbon paper between the grinding surfaces while in the mouth.

On account of being obliged to raise the lower lip so very high to meet the upper in articulation, the soft tissues in this case, raising nearly to the top of the gums in front; it was necessary to cut away the plate to prevent its excoriating. This patient now has a set of teeth which he prizes very highly.

A case of amateur dentistry, which is simply amusing, will complete the list.

A lady had been wearing a plate with two front teeth. One morning she dropped them on the floor and stepped on them, breaking off both the teeth. She had engaged to go with her best fellow to a party the following evening. A dentist would not mend them in time, as she lived some distance in the country. She could not go without them; yet go she must. She was in a dilemma.

Fastening the pieces of rubber together with wax, she had a model to work from. She would carve out a set of teeth for herself. What material could she use? First she tried a white turnip. Discarding that, she took a yellow бага turnip, which was of a firmer texture and a better color. And with this бага turnip and a pocket-knife, she actually carved out a plate with teeth attached, the whole thing the size and shape of the original "store teeth." And so successful was her work that she wore this turnip-plate to the party without detection. Soon after she carved a second set which she wore once. After that she again applied for professional services.

## The Treatment of Physical Pain.

Professor Hayem (*Journal of Nervous and Mental Diseases*) in an article on this subject gives the results of some very interesting studies in this direction. He contends that to intelligently treat pain the varieties must be thoroughly understood, and, to facilitate matters, classifies pain as follows: Class 1, treated according to the intensity; Class 2, according to location; Class 3, the course of the pain, as to periodicity, duration, etc.; Class 4, the age of the case.

The intensity of the pain is of great importance when it comes to treatment, for pain can be of such severity and frequency as to cause death; for instance, pain of kidney and liver colic, and of angina pectoris. From the frequency with which certain cases have paroxysms of pain, it is evident that such remedies as chloroform and morphine can not be constantly employed, and it is in this class of cases that the ingenuity of the physician is most severely taxed. One of the most painful affections is facial neuralgia; the remedies mostly employed are aconitine, morphine, and atropine hypodermically; antipyrine is sometimes used in the same manner. For internal medication, quinine, antifebrin and exalgine seem to offer the best results, the quinine to be given during the interval between the paroxysms. Aconitine is the drug mostly relied upon to control the pain; when the suffering is not severe, the antifebrin and exalgine are employed with benefit. Where the neuralgia is of the trunk or extremities, some remedy must be used which acts locally, such as revulsives. One of the best remedies which the author has found is the refrigeration of the part by chlor-methyl. If the condition is of the congestive form, as in recent rheumatic neuralgia, scarification is good practice. The topical application of a sedative is sometimes followed by good results. Some of the alkaloids of opium, made up in an ointment, to be rubbed over the part, often relieve pain. Veratrine, camphor, and menthol can be used in this way. In hemicrania, dependent upon bad digestion, antipyrin and phenacetin, internally administered, is often followed by relief from pain.

The opium preparations alone, or in combination with cocaine, are particularly indicated in the smarting pain occurring in neuroses of the digestive tract. The so-called rheumatic neuralgia is best controlled by the internal administration of quinine and salicylate of sodium.

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## PROCEEDINGS.

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### Michigan Dental Association.

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THE thirty-seventh annual meeting of the Michigan Dental Association was called to order by the President, Dr. Henry C. Corns, at the City Hall in the City of Saginaw, on the morning of Thursday, June 2d, 1892.

After the divine blessing had been invoked by the Rev. Dr. Warren, the Association listened to an address of welcome by Mr. C. S. Smith, of Saginaw, the Hon. W. S. Linton, Mayor of the city, who was to have delivered the address being called away from home. Mr. Smith, on behalf of the citizens of Saginaw, extended to the members of the Association the hospitality and freedom of the city, and was assured that our stay would be one of pleasure and profit. The President responded in a few well chosen remarks, after which an opportunity was given for the members present to pay their annual dues.

There being nothing further to come before the meeting at this time, a motion to adjourn was carried.

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#### THURSDAY AFTERNOON, JUNE 2d.

Meeting was called to order by the President. The minutes of the preceding meeting were read and approved. The President's address was received in a hearty manner by the Association.

On motion of Dr. Jackson, of Ann Arbor, seconded by Dr. Alden, a vote of thanks was extended President Corns for his excellent address.

Dr. Whiting read his paper on, "Dentistry in 1840."

Dr. Douglas, related his experience in filling teeth before the introduction of rubberdam, by use of napkins, etc., he showed several teeth filled with soft gold as far back as 1850. The doctor had for examination operative instruments made at that time, the work of his own skill.

The Association then listened to a well worded and pointed paper by Dr. Morgan, of Saginaw, on "Ether as an Anæsthetic." Dr. Douglas opened the discussion, citing several cases which he had to deal with in the administration of chloroform and compared the relative merits of the two anæsthetics.

Dr. Essig said he had excellent results from Nitro-glycerine for resuscitating patients; also thought the cone the best appliance for the distribution of ether.

Dr. Jackson, of Ann Arbor, was of the impression that death from chloroform was, in a great many cases, the result of carelessness on the part of the administrator of the anæsthetic, not enough attention being given to the details of such an operation.

Dr. Pelton, of Au Sable, thought that we should not administer an anæsthetic when the patient had heart trouble to any degree, and impressed this fact: that the welfare of patients should come before that of the operator.

Dr. Morgan closed the discussion by saying he had rather give ether in cases of apparent heart trouble than chloroform; that, in post mortem examinations, there has never been found any heart trouble from the administration of ether.

Dr. C. B. Blackmarr, of Jackson, read a paper on "Business and Professional Methods with our Patient's," the discussion of which was left over for the next session.

A motion to adjourn was carried.

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#### THURSDAY EVENING, JUNE 2d.

Dr. E. C. Moore, who opened the discussion of Dr. Blackmarr's paper, agreed so thoroughly with the essayist that he had no points to add nor faults to find.

Dr. Douglas read a paper on "Difficult Prosthesis."

Dr. Whiting had seen one of the cases and spoke of the difficulty which attended it.

Dr. Long, in speaking of Dr. Douglass' paper, dwelt upon this one point, "The Determination to Overcome every Difficulty." Dr. Douglass having had to use his own mechanical judgment in the cases cited.

Dr. Sweetnam, of Manistee, read a paper on "How to Practice Dentistry Successfully."

The discussion was opened by Dr. G. E. Sanders, of Saginaw, who dwelt upon the education of our patients and urged the necessity upon the dentists of keeping abreast with the times by using only the latest methods for saving the teeth; he advocated dental literature being distributed among the medium classes for their edification, also the exhibition of kindness to children, who should have our most sincere sympathies, and thereby gain their confidence; and a thorough understanding of our business, and, by our failures, to bring about success and a better feeling among the profession to supplant that feeling of jealousy and rejoice in the success of others; no insinuation should poison the mind of our brother's patient; build up your business on the science of dentistry from your own knowledge, and not from the failure of others.

Dr. Long, of Monroe, thought the paper covered broad ground; was pleased with it. He would advocate in the dentist, sobriety, honesty, cleanliness, kindness, truthfulness, industry, he should bear in mind that the patient's time is valuable as well as ours; a dentist should take a professional standing and live up to it.

Dr. Pelton, of Au Sable; was very much impressed with the paper, emphasized the one point with reference to the lazy man, advocated keeping good hours, always be ready to proceed with everything, and crowd his work instead of the work crowding him, should be strictly honest with all his patients, more especially children.

Dr. Jackson, of Ann Arbor, related his experience as regards honesty in practice, by which he gained the confidence of a child by telling the truth, success in life is "doing the greatest amount in life." "Good work will always command good prices."

Adjourned to Friday morning.

## FRIDAY MORNING, JUNE 3d.

Meeting was called to order. Minutes of the previous meeting were read and approved. Committee on Revision of the Constitution determined not to submit a report, thinking the constitution would answer every purpose at the present time.

Dr. Hoff, of Ann Arbor, chairman of the Dental Protective Association, said the Association was flourishing, work was being carried on with gratifying success. Dr. Crouse was anxious that the membership be enlarged. It was not its object to confine its work to patents only, but along other lines, viz: influencing manufacturers to make a better class of goods at a fair compensation; by buying patents and working in conjunction with manufacturers.

Dr. Hoff urged the necessity of all practitioners becoming members.

Dr. Harris, of Pontiac, member of the University Visiting Committee, could make no report.

Dr. Moore, of Detroit, offered the following resolution:

*“Resolved, That the University Visiting and Consulting Committee be discontinued in this Association as being superfluous.”*

Letters from Dr. H. A. Smith, of Cincinnati, and Dr. A. H. Fuller, of St. Louis, thanking the society for donation to work on Pre-historic Crania, were received and ordered placed on file.

Dr. Dorrance, of Ann Arbor, in lieu of a paper described the different forms of Tray's impression materials and gave some valuable points in the use of the same in securing accurate impressions.

A communication from C. S. Case, of Jackson, stating his inability to be present was read, received, and ordered placed on file.

On motion of Dr. J. Lathrop, of Detroit, seconded by Dr. Harris, of Pontiac, Dr. L. G. Whiting, of Saginaw, and Dr. J. Robinson, of Jackson, were made honorary members of the Association.

The committee on a permanent place of meeting, through

the chairman Dr. J. Taft, rendered the following report of progress, which was received and committee continued.

#### REPORT OF PROGRESS.

Your committee, to whom was referred the question of a home or fixed place for holding the annual meetings of this Association, would report :

That they have considered the subject, in its various aspects and bearings, and present the following *suggestions*, viz: that the next annual meeting be held at the Dental College in Ann Arbor, at a time to be fixed by the Executive Committee, not later than June 20th, 1893.

Also, that Ann Arbor be fixed as the permanent home of the society.

Also, that the Executive Committee, in connection with this Committee on place of meeting, or its successor, be requested to consider the propriety of making provision for a more extended series of clinics and demonstrations that may occupy from two to four days, and if, in the judgment of the joint committee, such a work seem practicable and desirable, the Committee have power to make preparation for such a course of work.—J. Taft, chairman.

#### REPORT OF CLINICS.

Dr. J. G. Walton, in his clinic, brings to our attention the advantages of half shields in those cases of abrasion where the teeth, being worn very short, or the patient being aged or infirm, he may have an operation that may be quickly done, and promise comfort and usefulness, often saving him late in life the struggle of learning to become expert with artificial teeth.

He makes no claim of an artistic operation as he performs it, but assures us that it is practical, and satisfactory to patient and dentist.

Dr. L. F. Owen, of Grand Rapids, gave a clinic on the different methods of root filling.

The doctor said he had no new methods to introduce, but filled roots as the occasion demands, and does not practice immediate root filling only in cases where the pulp is removed by mechanical means or by the use of cocaine.

In cases where the apical foramen is large, he fills that opening with gold, lead or tin, then fills with gutta-percha or cement.

Dr. W. H. Dorrance gave a clinic on porcelain inlays, describing simple methods, claiming not only its adaption, but its artistic beauty.

Dr. Gish of Jackson then read his paper on "Electricity as Applied to the Art and Science of Dentistry," which was discussed by the members present, stress being laid upon the therapeutic application.

Dr. Gish was commended for his efforts along this line. It was the sentiment of the meeting that he should continue investigating this work as he was so well fitted for it.

The meeting adjourned to 9 o'clock Saturday morning.

In the evening the Association was the invited guest of the dentists of Saginaw, at the beautiful Hotel Vincent. The following account of the proceedings is taken from the Saginaw Courier-Herald.

#### THE BANQUET.

The handsome dining room of the Hotel Vincent was last evening turned into a floral bower. The room was banked and filled with potted plants and palms; from every conceivable nook and corner hung festoons of roses and handsome vines. In the rear of the room Boos' superb orchestra was stationed. Some 18 small tables were set for the guests; at each place a button-hole bouquet was to be found and one of the handsomest menu cards ever offered to a banqueted party. Thus arrangements were made for the banquet tendered by "The Dentists of Saginaw" to "The Michigan Dental Association." At 8:30 the guests were seated and partook of the palatable repast which the management of the Hotel Vincent had prepared with great care, and which consisted of the following

#### MENU:

New York Counts, Broiled Whitefish, Saratoga Chips, Beef Tenderloin, Mushrooms, Spring Chicken, Water Cress, Fried Frog Legs, New Potatoes, Vienna Rolls, Tea Biscuit, Plain Bread, Assorted Cake, Strawberries, Fruit, Crackers and Cheese, Tea and Coffee.

During the discussion of the eatables the orchestra rendered several selections and all were placed in a good humor. At the end of the last course the Arion quartette, composed of Messrs. Evans, Watrous, Bostwick and Mearns, rendered "Hark! The Trumpet Calleth," in such an acceptable manner that the dentists demanded another song, when they sang "Who Built the Ark?" which pleased the audience immensely.

President Corns then arose and in a brief speech returned thanks for the elegant supper and for the courteous treatment which they had all received from the management of the Hotel Vincent. He then called upon Rev. George F. Warren, who spoke a few words, and who was followed by Dr. J. Taft, Dean of the Michigan University. Dr. Taft responded to the toast "The Progress of our Profession." He said: "The progress that has been made in the dental profession can only be realized by those who have taken part in the great work." He cited the time when the blacksmith or the cobbler could extract a tooth as well as a dentist, and when a dentist was considered but little better than a thief, when the medical profession looked upon the dental profession as a miserable art. He then showed how at the present day they rank high in the professional walks of life and how the medical fraternity invite dentists to become members of their associations. In conclusion he said: "The progress has been upward and onward, and as the responsibility has increased so has the profession advanced to meet all requirements."

He was followed by Dr. N. S. Hoff, of Ann Arbor, who responded to the toast, "The Young Members." He entreated the young men of the profession not to give up their studies on the completion of their college course; nor to develop their business ability to the detriment of their professional ability. His remarks furnished much food for thought for the young men of the profession, and were well received.

Dr. George L. Field, of Detroit, responded to the toast "Our Lady Patients." The doctor soon had his listeners in a roar of laughter and kept them in good humor throughout his remarks.

Dr. A. T. Metcalf, of Kalamazoo, responded to the toast "Our Saginaw Friends." The doctor did not confine himself much to

his subject, but he told a number of good anecdotes which enlivened the dentists.

Dr. J. A. Robinson, of Jackson, was then called upon. Dr. Robinson, is one of, if not the oldest practicing dentist in the United States, being 80 years of age, and having been in active practice for the last 57 years. The old gentleman is as hale and hearty as can be, and his short talk was of great interest to all. He told of his early practice and the contempt he was held in. His talk was bright and wholesome throughout and showed that the doctor is a great lover of his profession.

The quartette then sang "Good night," after which the Orchestra played "Auld Lang Syne," and the banquet was brought to a close by all singing the old familiar song.

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#### SATURDAY MORNING, JUNE 4th.

Meeting was called to order by the President. Minutes were read and approved.

Dr. Hoff read a paper on "Antizymotics, or Agents which Prevent Fermentation and Putrefaction."

Dr. Taft moved the discussion be postponed owing to shortness of time.

On motion of Dr. Field, seconded by Dr. Moore, the election of officers was ordered and the result was as follows:

For President, Dr. N. S. Hoff, of Ann Arbor.

For 1st Vice-President, Dr. W. P. Morgan, of Saginaw.

For 2d Vice-President, Dr. J. L. Sweetnam, of Manistee.

For Secretary, Dr. J. Ward House, of Grand Rapids.

For Treasurer, Dr. George H. Mosher, of Jackson.

The following names were reported favorably by the Board of Censors, and, on motion which was carried, were elected members of the Association:

F. S. Anderson, of Midland; F. H. Essig, of Dowagiac; William S. Milligan, of Saginaw; J. S. Wilde, of Petoskey; W. H. Kessler, of Detroit; A. T. Loeffler, of Saginaw; J. D. Shunck, of West Bay City; W. P. Morgan, of Saginaw; R. G. Porter, of Petoskey; George S. Root, of Grand Rapids; Manning

A. Birge, of Grand Rapids; H. O. Harvey, of Battle Creek; J. A. White, of Saginaw; William Gooding, of Saginaw; Irwin Meyers, of Saginaw; L. G. Dean, of Vassar; J. F. Perry, of Muskegon; F. E. Benton, of Fenton; W. B. Flynn, of West Branch; R. W. Sweetnam, of Muskegon; Dr. Lamb, of——; J. A. Fritz, of Cass City; Gordon W. Welch, of Jackson; W. H. Knapp, of Jackson.

Dr. Field presented the following resolution, which was ordered engrossed on the minutes and printed in the daily papers:

“ *Resolved*, that the thanks of this Association be tendered to our Brother Dentists of this city for their kind and brotherly reception tendered us during this meeting.

To the Hotel Vincent, from the proprietor down through every grade of employee till we pass the bar keeper, for their very kind and courteous treatment during our stay.

To the Mayor and City Council for the efforts put forth by them for our general good and comfort during our brief stay in this the beautiful City of Saginaw.

To those who have added to the general benefit and interest of this meeting by what they contributed as clinics and essays.

To our very worthy friend, Mr. Calkins, and his worthy lieutenant, Mr. Barnett, for all that they have done at this time that has added so much to the general happiness of this meeting.

And to Divine Providence for the most delightful weather that we have enjoyed whilst here, as we can now all go home with the assurance that the dry spell is broken.

Also to the Press of this city, for their very correct and satisfactory reports of our meeting.”

The President appointed the following members of the different committees:

Local Committee on Arrangements, Dr. W. H. Jackson, of Ann Arbor; Dr. L. P. Hall, of Ann Arbor.

Member of the Executive Committee, Dr. H. C. Corns.

Member of the Board of Censors, Dr. W. A. Dorland, of Grand Rapids.

Member University Visiting Committee, Dr. W. Williams, Sault Ste Marie.

Supervisor of the Clinic in Operative Dentistry, Dr. J. A. Watling. of Ypsilanti.

Supervisor of the Clinic in Prosthetic Dentistry, Dr. W. H. Dorrance of Ann Arbor.

Moved by Dr. Corns, seconded by Dr. Field, that an order for \$5.00 be drawn to pay the janitor; the following bills be ordered paid: Dean Printing Company, \$6.25; Secretary, \$15.83.

The Treasurer's report was read as follows:

Cash on hand at the beginning of present session, \$162.09; receipts at present session, \$174.00; expenses present session, \$52.07; leaving a balance of \$284.02.

Moved by Dr. Field, seconded by Dr. Moore, that we adjourn to meet at Ann Arbor not later than June 20th.

Meeting adjourned.

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## SELECTIONS.

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### Uses for the Oxysulphate of Zinc.

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Dr. W. D. Miller, of Berlin, says: "The oxysulphate of zinc is a material which is not as extensively used as it deserves to be."

The preparation he uses is Fletcher's Artificial Dentine. He adds:

"The one I use consists of a white or yellowish-white powder, oxide of zinc, and a syrupy, opaque liquid, whose exact composition I am unable to give. As I have been informed by the manufacturer, 'the artificial dentine is an oxysulphate in the same sense that the oxychlorides are oxychlorides; the hydrochloric acid in the basic compound is replaced by sulphuric acid, and it is really a basic sulphate of zinc with a small proportion of free oxide.'

"When mixed moderately thick it hardens quite rapidly, in fact, as soon as it is in the cavity it is hard enough to undergo the necessary trimming. The time required for its setting can,

however, be increased *ad libitum* by mixing it sufficiently thin. Like other preparations of its kind, it rapidly deteriorates in quality if any impurities obtain access to it, or if the bottles are not kept perfectly corked.

“ When fully hardened it has not quite the hardness of plaster of Paris, but is a little tougher. In positions where it is not affected by mastication, I have known it to last as long as two years, though it is solely for temporary purposes that I use or recommend it. It is practically non-irritant; a quantity of the material mixed, being taken upon the tongue, produces about the sensation of a half per cent. solution of carbolic acid.

“ 1. For capping exposed pulps. When the pulp has been fully prepared for capping I mix a small quantity of the cement to such a consistency that when it is taken upon the point of an excavator it does not flow off from it, but still is sufficiently thin to hang down in the shape of a minute drop. If a drop of cement of this consistency a little larger than a pin head is brought into contact with the point of exposure, it spreads itself out over the surface of the pulp, adapting itself perfectly to its irregularities and forming a much more perfect covering than can be obtained with asbestos, pieces of paper, gutta percha or any other material which cannot be applied in a semi-fluid state; besides, what is of greatest importance, it may be applied without a trace of pressure.

“ An antiseptic capping may easily be produced by incorporating the antiseptic into the capping material, though some substances interfere with the hardening. As soon as the cap has hardened (about two minutes more if the cement was mixed very thin), the filling may be completed. If it is a doubtful case, I finish the operation with *oxysulphate* and wait three or four weeks. If it is a fresh exposure and the pulp healthy, I finish with *oxyphosphate*. If finally I have every reason to exclude the possibility of a failure, I place a layer of *oxyphosphate*, over the cap of *oxysulphate*, and complete the operation with a permanent filling material at once. The directions for use accompanying the material appear to me to be fundamentally wrong; my manner of using it will, I am sure, give better results.

"2. In the operation of perforating or removing hard fillings from pericementitic teeth, I have found the oxysulphate to be of the greatest service. How painful if not unbearable for the patient, and how trying to the operator it is to operate upon a tooth which may be so sensitive that the slightest touch causes excruciating pain, we all know, and yet this operation may be made almost or quite painless. Dry the tooth to be operated upon as well as the adjoining tooth, on each side, with bibulous paper, then mix a large quantity of the oxysulphate, say half a thimble full, and plaster it with a broad spatula upon the lingual as well as labial surface of the three teeth, slightly pressing upon it so as to force it between the teeth. It hardens sufficiently in one or two minutes to fix the tooth immovably between the adjoining teeth. The ease with which the operation of removing the filling may then be performed is often a matter of surprise both to patient and operator. In these cases plaster of Paris may take the place of oxysulphate.

"3. In like manner oxysulphate or plaster of Paris may be used during the operation of filling with gold, for fixing teeth which have become loosened, no matter by what process.

"4. I also sometimes make use of the oxysulphate for pressing the gums away from the cervical margin of cavities, particularly in wedged shaped cavities where cotton cannot be made to hold. Dry the cavity thoroughly and fill it with cement mixed rather thick, and when it has begun to harden press upon it with a pledget of cotton. The cement spreads out and forces the gums back at the margin of the cavity.

"5. For enclosing applications on cotton of whatever nature I have found the oxysulphate vastly superior to gutta percha. Whether I have to make an application to an inflamed pulp, for the purpose of sterilizing the cavity, or disinfecting a root canal, or devitalizing a pulp, or obtunding sensitive dentine, I almost invariably cover it with the oxysulphate. It is a very difficult matter to cover a pledget of cotton, well saturated with liquid, with gutta percha, particularly in a shallow cavity, but it may be very easily accomplished with oxysulphate. The necessary experience in the manipulation of the material is best acquired

by making a few fillings out of the mouth. It is particularly in making applications of arsenic to the dental pulp that the manner of enclosing them has great advantages, as it admits of keeping a local anæsthetic constantly in contact with the pulp, and avoids the pressure which is too frequently a cause of severe pain following such applications.

"6. I now and then use the oxysulphate for mixing metallic caps over the teeth in regulating appliances where they are to remain but a short time, also for temporarily setting pivot teeth. In short, any one who becomes acquainted with the material will find it so useful that he will wonder how he was ever able to get along without it."—*Dominion Dental Journal*.

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### Position in Sleep.

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The necessity for uninterrupted and refreshing sleep is unquestionable. Sleep that is interrupted by whatsoever cause, loses its refreshing power and the person awakes to duty a loser.

It is unnecessary to repeat here the number of hours of sleep required for the different periods of life, but attention will be called to one point frequently overlooked by physicians when directing patients and others concerning their rest. This is POSITION in sleep. When sleeping, it is necessary for breathing, circulation, and often digestion to go on untrammelled—otherwise sleep is disturbed.

The proper position for securing the easiest discharge of all three of these important functions is probably as follows:

Lie on the right side (unless some physical ailment prohibits) with head slightly drawn down on the pillow, which should be five or six inches high. Flex the limbs slightly, allow no joint to rest upon another. Close the lips and breathe through the nostrils, not the mouth, unless nasal stenosis is present (in which event have removed the hypertrophied tissue). Have lights extinguished or removed to an adjacent room with connecting door open; if an hypnotic has been taken all talking and bustle in the room should cease, in fact everything conducive to sleep should be observed.       \*       \*       \*       \*       \*

If free *respiration* alone were the desideratum, the lying on the back would allow more freedom of action to the muscles of respiration than any other position, but circulation and digestion have claims to be considered. So the lying on the right side, with the head slightly drawn down on a pillow five or six inches high, will give freer action to the external inter-costal and the cricoarytenoid muscles, and this position throws the stomach and liver downward and slightly forward, relieving the diaphragm of pressure. The arms should not be folded on the chest nor on the abdomen; for in women the chest needs greater freedom from weight than does the lower half of the trunk. This is possibly a provision of value to the *enceinte* woman. The reverse holds for a man, as he can tolerate for a short time only a weight on the lower portion of the trunk. So the upper extremities will rest most comfortably placing the right by the side of the body, with the left lying on the thigh.

*The circulation.*—The heart is beautifully poised in the thorax, swinging as it does in neither a vertical nor horizontal position when one is erect, but on assuming the recumbent posture on the right side it rests as it were in a hammock, lying almost horizontally, its action becoming less labored, its beats less frequent, its movements comparatively free from friction.

The right lung is probably divided into three lobes, so that in the recumbent position and to the right side the heart may press on the inner surface of the middle lobe without interfering with the action of the lower and upper lobes. In this proper position in sleep the liver and the loaded stomach are not harmfully contiguous to the structures between them and the heart.

Flexing to a slight degree the extremities insures an unobstructed flow of arterial blood. Allowing no joint to rest heavily on another insures an unobstructed return of venous blood, and also obviates injury (by pressure) to the nerves. Nerves thus become obtunded and the sleeper is aroused with "cramping" muscles or with his leg or forearm "asleep."

*The digestion.*—Lying on the right side accomplishes rapid evacuation of the stomach and small intestines of their contents, from the fact, of course, that the pyloric orifice hangs downward

and to the right, allowing unobstructed passage of food, as fast as digested, into the small intestines, where, during quiet sleep, absorption may take place and the residue pass through the cecal valve and on to the descending colon.—*Med. Jour.*

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## EDITORIAL.

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### A Correction.

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#### THE WORLD'S COLUMBIAN DENTAL CONGRESS.

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The list of officers for the Columbian Dental Congress published in the November No. of the Register, was defective, owing to the omission of the names of Drs. A. W. Harlan, George J. Friedrichs, Louis Ottofy, Ralph Dillon, and John S. Marshall.

We publish below a complete list, which is as follows:

President, Dr. L. D. Shepard, of Boston, Mass.

Vice Presidents, Drs. W. W. H. Thackston, Farmville, Va.; Henry W. Morgan, Nashville, Tenn.; A. L. Northrop, New York City, N. Y.; W. W. Allport, Chicago, Ill.; W. O. Kulp, Davenport, Iowa; C. S. Stockton, Newark, N. J.; E. T. Darby, Philadelphia, Pa.; H. J. McKellops, St. Louis, Mo.; J. H. Hatch, San Francisco, Cal.; J. B. Patrick, Charleston, S. C.; and John C. Storey, Dallas, Texas.

Secretary General, Dr. A. W. Harlan, Chicago, Ill.

Assistant Secretaries, Drs. Geo. J. Friedrichs, New Orleans, La.; Louis Ottofy, Chicago, Ill.; and Ralph Dillon, Chicago, Ill.

Treasurer, Dr. John S. Marshall, Chicago, Ill.

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### Bibliographical.

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QUESTIONS AND ANSWERS, FOR DENTAL STUDENTS. By Ferdinand J. S. Gorgas, A.M., M.D., D.D.S. A series of Questions and Answers for Dental Students, consisting of three

parts. Part 1 pertaining to the Freshman Course, Part 2 pertaining to the Junior Course, and Part 3 to the Senior Course.

These are questions and answers intended to cover the course of instruction for the three years of the regular course, as now adopted by nearly all Dental Colleges.

Part 1, embraces Anatomy, Dental Physiology and Histology, Dentition, Malformed Teeth, Dental Pathology, Chemistry, Dental Materia Medica and Therapeutics, Operative Dentistry, and Prosthetic Dentistry.

Part 2 contains, in addition to Part 1, Vulcanite and Celluloid Dentures. During the second year more advanced work is done upon the elementary branches than in the first.

The third volume has not yet come to hand.

These Questions and Answers seem quite well to cover the ground of a regular course; they can at best, however, only be helps, the mere committing to memory the answers to the questions here propounded would do very little in the way of furnishing one for the practice of his profession, they would, however, be some aid. Every question propounded here should be thoroughly studied by each student, who should be able to give an intelligent answer from his understanding of the subject, and in his own language. Whether the questions alone would not be better than accompanied by the answers, and the student required to find answers, is one upon which doubtless there is difference of opinion. This work like all of that done by the author is well done, and every practitioner as well as student would be benefited by examining the work.

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### For the World's Fair.

The question soon will be, and in the minds of many even now is, how best to get there. The inquiry will be answered somewhat with respect to the starting point. Taking Cincinnati as one of the points from which there will be an immense travel during the time of the Exposition, the Monon Route via the C. H. & D. R. R. presents unsurpassed facilities. It is the most direct route, its equipment is of the best, its management has no superior, the train service is unexceptionable. Nowhere will more gentlemanly and accommodating attendants be found than on the trains of this road.







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